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AMIGA SHOPPER

From the makers of AMIGA FORMAT

ISSUE 3 • JULY 1991 • THE MAGAZINE FOR AMIGA BUYERS

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Can the DaataSCAN hand scanner give your DTP a professional look?.. page 41

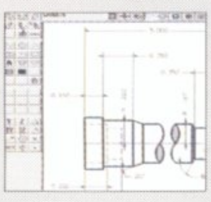
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A500 and A2000 models reviewed • Comprehensive speed tests

FULL REVIEWS BARS & PIPES PROFESSIONAL • DAATASCAN • ATONCE EMULATOR • DYNACADD

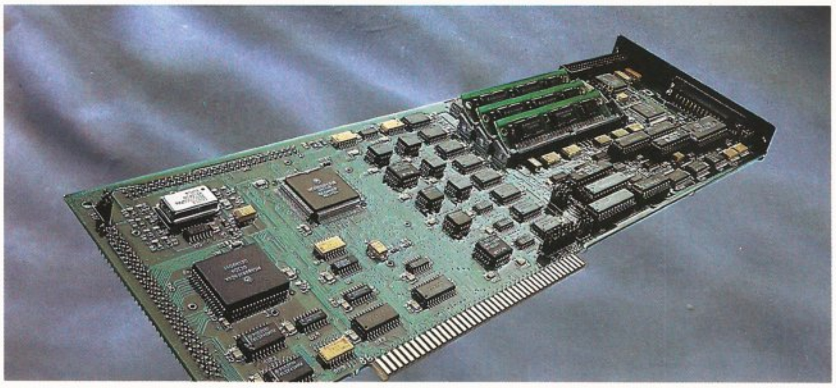
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GVP Series 2 RAM Card

- Comes with 2MB as standard
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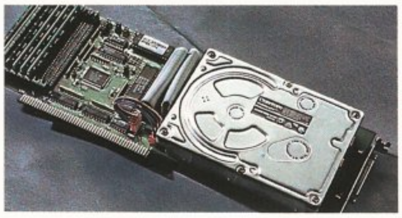
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- Fully autobooting
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114MB NEC 20mS	£549

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- Their Finest Hour

Basic A1500 Pack	£715
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Other combinations available, phone for details

Other Professional Products

ICD Flicker free video for Amiga 1500/2000	£250
600MB Optical hard disk	£2995
200MB Tape streamer	£715
20MB Floppy drive	£815
Amiga 2000 Internal floppy drive	£50
1MB x 4 ZIP RAM for Amiga 3000 (per chip)	£30
1MB Simms for GVP & Nexus cards	£40

Quotes on Amiga 3000 Systems available

Access

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VISA

All prices include VAT and are subject to change



WHAT'S IN STORE

AMIGA SHOPPER

SHOPPING LIST

This is an alphabetically sorted, quick-reference list to everything in the issue. Just look for the relevant name of the software, hardware or subject and it should be here. Some things are cross-referenced under more than one heading for ease of use.

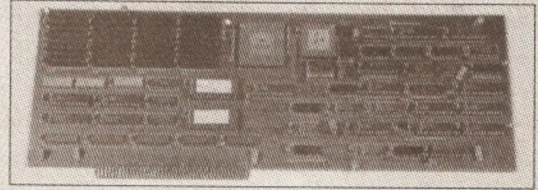
CONTACTS

Editorial
Bob Wade – Editor
30 Monmouth Street, Bath BA1 2BW
☎ 0225 442244

Advertising
Margaret Clarke – Advertising Manager
2nd Floor, Rayner House, 23 Higher Hillgate, Stockport SK1 3ER
☎ 061-474 7333

Subscriptions
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FEATURES



Put the pedal to the metal with an accelerator.

REVIEWS

TUTORIALS

AMIGA ANSWERS

BEGINNERS START HERE

Beginners should find these three articles of particular interest – check them out now.

REGULARS

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Introducing Saxon Publisher & Draw 4D to the UK...

Saxon Publisher provides you with performance unparalleled by other DTP programs, with features so powerful and flexible that even the most complex documents can be created in a fraction of the time. A program that incorporates numerous advanced typesetting features not available anywhere else - at any price. Saxon Publisher will change your perceptions about what a truly professional DTP program should be...

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SupraDrive™ 500XP Micro-power hard drive, SCSI interface, & RAM for the A500. Easily expands for 1/2 to 8MB RAM. Includes Amiga bus pass-through, SCSI port, software. From £425.00

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Coast disappears into Horizon

New Horizons, publisher of the word processor *ProWrite*, has taken over US software company Central Coast Software.

From now on, all development, production, customer support, sales, and marketing activities of CCS will be moved to Austin, Texas, USA.

CCS's products include *Quarterback*, a hard disk backup program, and *Quarterback Tools*, a set of disk utilities for, among other things, the recovery of deleted files. James Bayless, president of New Horizons, sees the addition of these programs to his company's line as enabling it to "provide a wide selection of high quality software to solve the needs of Amiga users."

New Horizons Software
☎ 010 1 512 328 6650

Computer Crusaders

Christian programmers are invited to submit software for the Best Christian Software Writers 1991 competition, organised by Evangeltrust.

The software can be in the form of a game, a Bible study aid, database or anything that is of use to religious education teachers and church workers. Many computer formats, including the Amiga, are allowed. *(Presumably Jim Bakker won't be allowed to enter any accounts programs – ed.)*

Separate categories exist for individuals and groups. Each category is subdivided for those under 15 and those of any age. The software must have been written in 1991 and the closing date is December 31. Entry forms can be obtained by sending a SAE to Evangeltrust, PO Box 224, Kingston upon Thames, Surrey KT1 2NX.

Amiga advances in advertising

Creator of the Vitalite and Milky Way adverts, Speedy Films, has revealed the important part played by the Amiga in the development of the ads.

Using a set up of an Amiga 2000 and two 500s for storyboarding and animatics, the company claims that "repetitive painting time is minimalised and valuable creative time is saved" – that is, it's quicker with an Amiga.

Speedy Films also owns up to a certain amount of game playing to relieve 'creative executive stress'. *(Which only takes up about eight hours of the day I'm sure – ed.)*

Oxxi into overdrive

Prolific US Amiga software house Oxxi has an impressive list of launches on the way. Here's what you can expect over the next couple of months

Colourful upgrade

Users straining at the bit for Oxxi's *Spectracolor* and *SoundMaster* will be pleased to know that they are now being shipped.

Spectracolor, the successor to *Photon Paint*, is the only Amiga HAM package to support Brush and Key Frame Animation. An upgrade offer for existing *Photon Paint* owners is also available.

Soundmaster is an 8-bit stereo sampler. It is supplied with a built-in microphone, but also has two input jacks and microphone inputs. Bundled with it is *AudioMaster III*, the sample editing software, and the whole thing costs £129.95.

Due for imminent release is *TurboText*, an editor that allows macro creation and keyboard remapping, as well as interfacing with ARexx to give more sophisticated user control. No UK prices are available yet, for this new clutch of programs, but watch this space for further details.

All of Oxxi's programs will be distributed in the UK by

HB Marketing
☎ 0753 686 000
Oxxi
☎ 010 1 213 427 1227

The Visionary position

Budding games writers will be able to get their teeth stuck into a new high speed games-orientated language this month.

The new *Aegis Visionary* package, from Oxxi, comes with a compiler and interactive debugger to make writing speedy games that much more painless.

Following the format of Basic, the package has over 60 commands designed to deal with game mechanics such as screen fades, dissolves and colour cycling. Up to 50 on-screen hotspots can be defined, which let the computer know when a sprite has moved over a programmer-defined portion of the screen.

In addition, scrolling and blitting are supported, as well as the ability to have up to 25 IFF screens and 25 IFF sound samples in memory at once. Multiple fonts are also supported.

Finished games are compiled into a stand-alone format, running independently of *Visionary*. It looks like it will be a busy Summer for game creation tools, with such packages as Mandarin's *AMOS* and Domark's *3D Construction Kit* also available to budding games programmers. Oxxi's new contender in this lively market is scheduled for release in July, but a UK price has yet to be finalised.



Popular veteran Amiga paint package, *Photon Paint* is succeeded by *Spectracolour* – just one of a welter of launches by Oxxi aimed at taking the software market by storm this Summer.

Lies, damn lies and statistics

Oxxi is about to open up the world of statistics and market research to Amiga owners with the new *P-Stat*. Launched at the Amiga World EXPO in New York, as reported in last month's *Amiga Shopper*, *P-Stat* features a spreadsheet-style interface for data entry and its capacity is limited only by available memory. An A3000 with 18Mb can handle two million pieces of data, making it equivalent to a VAX minicomputer.

The software is controlled using a mouse and menu interface system to give access to over 50 numeric and statistical functions. These include: matrix multiplication, transposition, additions, inversions, logarithmic and non-logarithmic transformation functions. Random numbers can be generated with either uniform, normal, exponential and gamma distributions.

P-Stat gives the user 25 graph styles, including x-y plotting, histograms, 2D and 3D plots. It is possible to animate graphs so that, for example, 3D plots can be rotated to reveal hidden detail. Output can be sent to any Workbench printer, HPGL-plotter or PostScript printer. No price is available as yet.

Play it again, scan

The recent Amiga World EXPO in New York saw the first showing of ScanMaster from Oxxi. The new 24-bit flatbed colour scanner has a resolution of 300 dpi and handles documents up to 8.5 x 11.7 inches.

With the bundled *ImageMaster* software it can create CMYK colour separations in 16.7 million colours and copes with monochrome images at 256 grey levels. Tools supplied enable flipping, mirroring and rotation of the image. Prices for this and other new Oxxi products will be revealed soon.

Join the animation festival

by Phil South

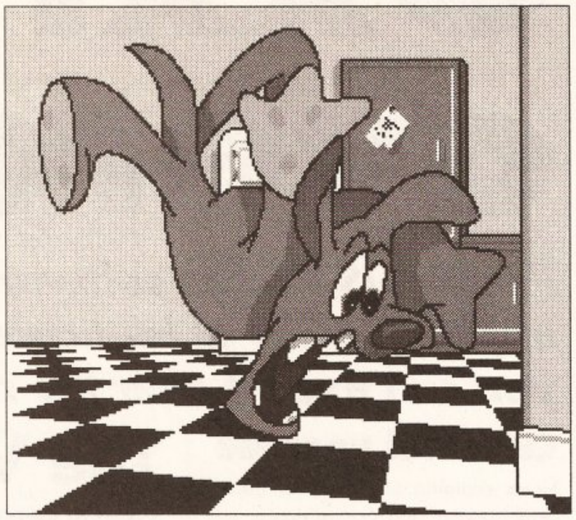
Following last year's stunning success, the annual Amiga Animation Festival has rolled around, and once again it opens its doors to anyone with an Amiga who thinks they can knock our socks off with a splendid piece of Amiga based animation.

The animation competition is timed to coincide with the Edinburgh Festival and invites original and innovative entries of animated computer graphics on disk or video.

Top prizes on offer

Winners receive top quality hardware and software to the value of, oh quite a few quid I shouldn't wonder. Animations should be sent on floppy disk or PAL format VHS video cassette, so this means you can either just send ANIM files, or load them all on to tape for longer animations. Entries must be in by July 31 1991 – send them to: Fiona Shivas, Animation Competition, Amiga Centre Scotland, 4 Hart Street Lane, Edinburgh, EH1 3RN. If you need some further info, then call Fiona on 031-557-4242.

Amiga Shopper and sister magazine *Amiga Format* will be supporting the festival, as we have since it began, and we'll be contributing a prize for one of the lucky winners. As the results come in, I'll tell you all about it in a forthcoming look at the overall winner. (Trivia point: among past winners of the Animation Festival is none other than Amiga Shopper's own video expert, Gary Whiteley. Not a lot of people know that.)



Prizewinners were shocked and stunned with the superb goodies up for grabs at the Amiga Animation Festival last year.

The write stuff?

Now you can write stunning commercial games and earn a fortune with the aid of *The Commercial Games Programmers' Guide*, a new book by David Gibbon. *(If he's so good at writing games, how come he's not as rich and famous as David Braben or the Bitmap Brothers? – ed.)*

David, a professional programmer, has crammed all his knowledge into this book.

Topics include animation, graphic design, starting up a software house and book-keeping. The book is aimed not only at programmers but also designers, artists and musicians.

The Commercial Programmers' Guide, ISBN 0 951760 0 3, costs £7.95 and is currently only available by mail order from the publisher, Software Developments. ☎ 091 373 1536

Scala gets a facelift

A new version of the presentation program, *Scala* is very close to release, correcting all those little niggles that held it back from being the real video and presentation champion. *Scala* 1.1 features anti-aliased fonts, scrolling and crawling, much smoother transitions, sound support and a Canon Ion Driver, which will enable users of the Ion magnetic disk camera to directly use its pictures with Scala. Apparently, the upgrade will be free to registered owners.
Silica Distribution ☎ 081 308 0888



Looks like we'll have to re-review Scala thanks to its new 1.1 upgrade.

Messages to Mercury

In the Comms section of *Amiga Shopper*'s June issue we printed the incorrect number for telecommunication company, Mercury. The number given was for the fault reporting department, whereas the customer enquiry number is ☎ 0800 424 194. Also, we stated that local calls could not be made with Mercury. In fact they can, but are charged at British Telecom's 'A' rate. Sorry Merc's.

Through the X window

High powered applications previously available only to mainframe workstation users are now able to run on the Amiga with *X11*, the latest version of *X Windows*. Now launched on the Amiga (minimum 1Mb) by GFXBase the windowing system is available in the UK from the Amiga Centre Scotland.

X Windows was designed at the Massachusetts Institute of Technology (MIT) to allow graphic data to be shared on various machines independently of operating systems. Similar to, but more powerful than Intuition, it is now an ANSI standard. It is of particular use in networks of several Amigas, or Amigas linked to machines such as Sun workstations.

Also from GFXBase is the Boing Mouse. This is an optical mouse, with three buttons instead of the usual two because X Windows prefers three-buttoned mice. *X11* costs £469 and the Boing Mouse £69.
Amiga Centre Scotland ☎ 031 557 4242, GFXBase ☎ 010 408 262 1469

Once driven, forever smitten

You can now expand your Amiga 500 while keeping the expansion slot free with the new hard disk from ICD.

The Novia 20i, a 2.5" 20Mb autobooting drive, fits between the Amiga's motherboard and cover, requires no soldering, and is accompanied with full installation instructions. It is priced at £387 and available from Power Computing in Great Britain.

Rather than a SCSI interface, the Novia uses an IDE (intelligent Device Electronics) adaptor, commonly used in portable PCs and, according to ICD, is noted for both reliability and low cost. The drive's name is from a Spanish word meaning 'little sweetheart'.
Power Computing ☎ 0234 840234
ICD ☎ 010 1 815 968 2228

Fjordable Amiga graphics

Digital Vision of Norway, author of *Scala* presentation software, has used a network of Amigas as the basis for their InfoChannel system. InfoChannel is a multimedia information system that can send and display text, illustrations and animations.

Digital Vision chose an Amiga 3000 as the host computer and 2000s and 3000s as the terminals. The company describes the Amiga as a 'natural first choice' because of its sound, graphics and animation quality. The system is currently on trial with a number of companies, including Thorn EMI International Rentals.

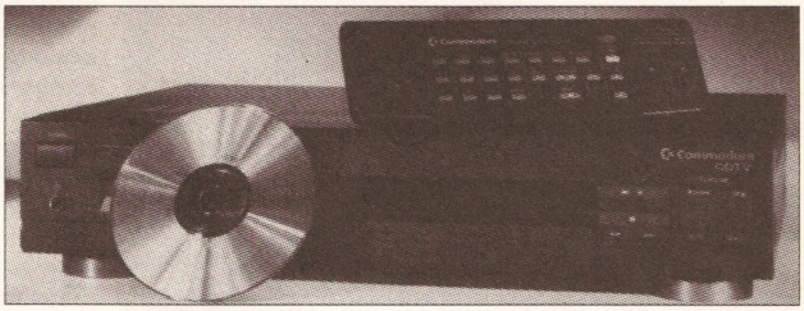
CDTV goes on sale

by Mark Smiddy

CDTV has been officially launched in the UK and is on sale now, although initial supplies are limited.

The venue for the launch of Commodore's Dynamic Total Vision was the prestigious surroundings of BAFTA, the British Academy of Film and Television Arts. Commodore's long awaited machine was not, as some might imagine, welcomed by a gathering of computer press, but by a vast number of invited celebrities from all areas of journalism and consumer sales. It was standing room only in one of BAFTA's large preview cinemas as the throng packed in.

The launch was presented by *Tomorrow's World* front man Howard Stableford and another ex-*TW* presenter Maggie Philbin. CDTV is to be bundled with an encyclopedia and a re-coded version of the hit game of the year *Lemmings* and is confirmed as costing £599, a lower price than many had been expecting.



Commodore's brave foray into the budding interactive home entertainments market has begun, but can it win over the great British public? Only time will tell.

Console yourself

The Amiga 500 has another console unit available for it. The Amiga Console Unit, from Kontax Computers, doesn't give more expansion potential, but is for users wanting to give their installations a more professional look.

Priced at £33.95, the aluminium-constructed unit will take the weight of a monitor or TV, with space underneath for the Amiga's modulator. Wires can also be hidden away and fed out through a centrally placed exit at the rear.

Space is provided at the side for an extra floppy drive above the Amiga's own. The Amiga Console Unit is available for from Kontax Computers ☎ 0628 773212

Imprecision

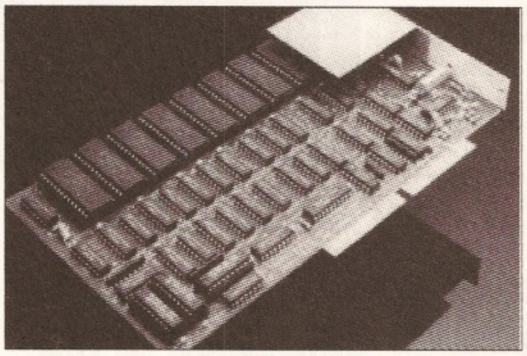
Our free supplement contained a picture of Precision Software's *Superbase Professional* 4 with a caption describing it as the Personal version. We would like to point out that the kind of graphics shown in the picture are not available with the £59.95 Superbase Personal, but only with *Superbase Professional* 4, retailing at £400.
Precision Software ☎ 081 330 7166

Re-Re-Remix

For all you radical rap dudes and would-be DJs out there, Microdeal has released its first CDTV title, *CD-Remix*.

Using an icon-driven language, users can create a storyboard of commands to re-sequence sections of music from a CD. As well as this, drum, speech and samples can be mixed in with the music, all at different volumes. Over 100 samples are included and all this is available for £29.99.
Microdeal ☎ 0726 68020

Less flicker for less



Soothe your curried cornea with this trick flicker fixer from microchip manipulator, Microway.

Users of the Amiga 2000 assailed by flicker-induced eye strain can now relieve their beadies with the Microway FlickerFixer at a reduced price.

Previously available for £325, the board is now selling at the special offer price of £125. Microway says the price drop is because of the high number of sales the board has achieved. It removes the flicker from the Amiga's interlace mode and the visible scan lines in the non-interlace mode.

The board slots into an A2000's video slot, is compatible with all software, and can be used in conjunction with the Amiga PAL output signal. Flicker Fixer supports a range of multi-scanning and VGA monitors with resolutions of up to 704 x 470 pixels obtainable in overscan mode. HAM is also supported. Microway ☎ 081 541 5466

Comprehensive victory rewarded by CDTV

Pupils at Lismore Comprehensive, County Armagh, have won Commodore's Business Education challenge. Their prize is one of the much sought after CDTV discs, the multimedia electronic book.

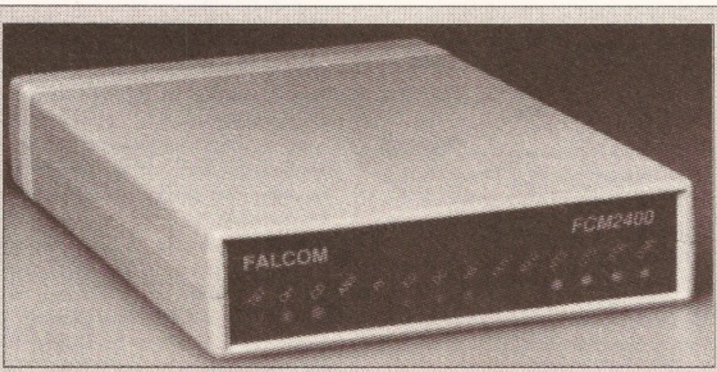
The competition involved the preparation and execution of a marketing plan for the pupils' school. Frances McKeown, the winning team's teacher, believes that pupils have "gained confidence and above all developed close links with local industry" by their efforts.

Still video moves in on the Amiga

Get your snaps onto the Amiga with Computerised Training Systems' driver software for the Cannon Ion camera.

The RC260 camera, which can store up to 50 stills on its own floppy disk system, connects to the Amiga's serial port via the IAV32 Interface Unit. Images can be sent to the Amiga, titled and output via a genlock device. Alternatively, images can be digitised and retained by the Amiga. Selection of images can be controlled from the CLI or from within a program. It's a nifty bit of kit but prices are prohibitive for the casual home user – RC260 Camera Kit £508.07, IAV32 Interface Unit £464.12, CTS Driver Software £229.12, FAC Film Adaptor £152.42, VF50 Disks £5.08.
Computerised Training Systems ☎ 0724 281 037.

The Falcom has landed



Get those bulletin boards a-buzzing with Falcom's new modem. It's got a specification that would knock the lice off a hedgehog.

It's time for more of that comms jargon I'm afraid, because Falcom has launched a new modem, the FCM2400.

There's no other way to describe it than to tell you it's a BABT approved Hayes compatible modem with V42bis, MNP5 data compression, V42 (LAPM) and MNP4 data correction, and supports CCITT and Bell standards. *(Try reading that while wobbling a finger vertically over your lips and you'll have a passable impression of speaking Norwegian – ed.)*

A nice touch about the Falcom is that as well as having the usual features like autodial, remote configuration, etc, it comes packaged with power plug, RS232 cable, software and manual so that you have everything you need to get started for the princely sum of £345.
Falcom ☎ 081 843 2277

Electra flying into action



by Cliff Ramshaw

Electra is Centresoft's new brand name, under which the UK distributor aims to market accessories for computers including the Amiga.

And to get the ball rolling Centresoft is launching a microswitch mouse, priced at the lowly sum of £17.95 and a half-size 880k external floppy drive for £69.99. Electra is the brand name and distributor, but the accessories will be available from independent computer stores.
Electra ☎ 021 625 3388

Plugging your things into a lot of other things is one activity the new Electra accessory brand name aims to plumb.

Sampling is simple

More swish sounds are now available to Amiga audio fanatics thanks to a range of new products from SunRize.

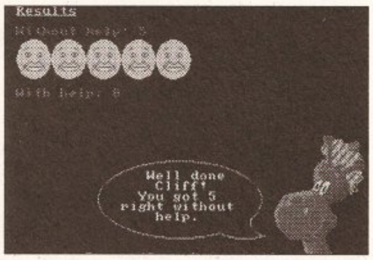
For more serious users there are the AD1012 and the AD1016 sampler cards, offering 12 and 16-bit resolution respectively. The AD1012 has adjustable low pass filters, an SMPTE time code reader and the signal to noise ratio of a professional video recorder, making it useful for editing video sound tracks. The AD1016 has eight-times oversampling , digital filters, digital I/O for linking to a DAT or CD, MIDI I/O and an SMPTE time code reader. It has the signal to noise ratio of a CD player. Both are bundled with SunRize's *Studio 16* editing software, which can record hours of audio data directly onto hard disk.

Those on smaller budgets will be interested in *Audition 4* and Perfect Sound 3. Audition 4 is an 8-bit sample editor, written entirely in assembler for speed, with the facility to record directly to floppy disk. Features include fast scrolling, free-hand editing, sequenced loops and real-time effects such as echo, mix, fade and flange, stop band filter and high, low and band pass filters. Perfect Sound 3 is an 8-bit stereo sampler that attaches to the Amiga's printer port and will take input from a CD, radio or microphone. Software is provided to record and edit any sound. This sells at £61.25. Prices for the others are yet to be released, but they will be distributed in the UK by HB Marketing.
HB Marketing ☎ 0753 686000
SunRize ☎ 010 1 408 374 4962

The monster match

Get Maggie the Loch Ness Monster on your side when teaching under fives pre-reading skills.

The tartan bereted behemoth makes a friendly appearance in *Mix and Match*, a colourful new suite of educational programs from Scetlander. The games are designed to teach children recognition, discrimination and memory, and presumably to allay fears over visits to Loch Ness. It costs £24.99.
Scetlander ☎ 041 357 1659



Technical editor Cliff got five right without help. He's soooo clever.

Checkout

HiSoft Basic

Documentation.......12/15
Good, easy to read and plenty of information. The innovative idea of an index makes the finding of this information relatively easy. Unfortunately, *HiSoft Basic* still lacks the depth of information required for a truly professional language package.

Ease of use.............10/15
Fairly straightforward. The editor is powerful, but not all functions are available from the manual. It is useful to be able to compile and run a program without leaving the editor.

Facilities.................26/30
All the nice commands of *Amiga Basic*, but with a couple of extras thrown in too.

Speed 10/25
Not recommended for those speed-intensive applications.

Price value...............9/15
A good, sturdy product for the price.

AMIGA SHOPPER 67/100

Not a bad compiler. The package has good documentation and plenty of useful features, but it is a shame HiSoft could not have improved its performance a little more. Even so, *HiSoft Basic* is good for the more pedestrian applications.

Those *AS* ratings explained in full

You may recognise that there Checkout box on the left as the usual format for our rating of products under review. If you've been wondering how the system works, then here's how everything is calculated.

Because we review so many different types of program and hardware, a single group of ratings is not flexible enough to assess all the aspects of each product. Thus the rating categories are different for each review, although things like Documentation and Speed will nearly always be there.

Another important aspect is the weighting given to each rating category to end up with the final mark out of 100. Price is one of the most important ratings, but others will vary considerably. For instance, compatibility accounts for many of the marks for a PC emulator and strength of construction or reliability will be a big score for mice and other accessories likely to take a beating.

Marks given in the Checkout box always add up to a value out of 100 and, although this is a somewhat artificial indicator of the quality of software or hardware, it does allow comparison between similar products. The thing to bear in mind is that we aren't dealing with games – a relatively low mark does not mean you shouldn't buy a product; it's a comparative indicator that takes into account many different factors. In all cases, you should base your buying decision on whatever factor is the most important to you, be it speed, price, reliability or any one of a host of features that can only be detailed in the full review and not in a single rating.

Diary Dates

Here is our list of what's going down in the Amiga world in the coming months. If you are organising an event you would like us to feature, send brief details to: Diary Dates, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW.

June 9
12th All Formats Computer Fair. The National Motorcycle Museum, Solihull, West Midlands.
John Riding ☎ 0225 868 100

June 22
13th All Formats Computer Fair. New Horticultural Hall, Westminster, London.
John Riding ☎ 0225 868 100

June 25-27
Multimedia '91. Olympia 2, London. Blenheim Online
☎ 081 868 4466

July 12-14
16-bit Computer Show. Novotel, Hammersmith, London.
Westminster Exhibitions
☎ 081 549 3444

September 20-22
Amiga World Benelux. Beursgebouw (Fair Building), Eindhoven, Holland.
InterExpo & Media
☎ 010 31 40 528 191

Thoroughly modern modems

Using those complicated modem thingies should be a little easier with the release of two new models from Pace, both available from Action Computer Supplies. The Ultralink Quad and the Ultralink Thirty Two come with a front panel LCD display for showing status information.

The Ultralink Quad supports speeds from 300 to 2400 bits per second (bps), using V22bis, V22, V23 and V21 protocols. It costs £475.23. The Ultralink Thirty Two is a little bit more speedy, capable of transmitting and receiving at up to 12000 bps. As well as all of the above protocols it supports V32 and costs £916.28.

Both have MNP class 5 data compression, error correction up to MNP class 4, and can operate either synchronously or asynchronously.
Pace Micro Technology
☎ 0274 532 000
Action Computer Supplies
☎ 0800 333 333

Power moves

Power Computing has changed address and phone number. You should now contact them at Unit 8, Railton Road, Woburn Road Industrial Estate, Kempston, Beds MK42 7PN ☎ 0234 843388.



If your database looks like this, you're ready to face the future.

Given the chance to gaze at the future of database computing, what would you see?

Graphical applications that are intuitive and yet incredibly powerful, supporting sound samples and even pictures.

Applications like Superbase 4 Amiga.



Unique features like the VCR panel mean browsing and reporting on data have never been simpler.

Superbase's WYSIWYG Form Designer lets you draw and design forms that are easy to understand and use.

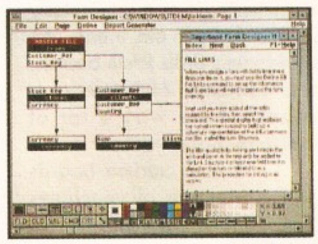
And, with its own comprehensive Database Management Language, you can develop professional applications.

You can share data with users of IBM-compatible PCs, while developers can make sophisticated database solutions available on both Amiga and Microsoft Windows platforms.



Superbase 4 Amiga also supports import/export of dBase, Lotus 1-2-3 and Microsoft Excel files.

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Denote the relational links between the files referenced in your form.

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Tel: 081 330 7166 Fax: 081 330 2089

Amiga '91 Berlin

25-29 APRIL

SHOW AS REPORT

Special agent Gary Whiteley, our man in Berlin, dons his hat and dirty rain coat to ferret out the best new products from across the Channel.

Business was slow and I'd just booted my Amiga, thinking to pass some time with a little raytracing. The phone rang. It was Bob from Future. I lit a Lucky Strike and listened hard. "Berlin, thursday", he said, "AMIGA '91 – go and get the lowdown and the green ones are yours." I packed my toothbrush, called my tour operator and arranged a flight.

And there I was in Berlin with three days to kill. I checked out Checkpoint Charlie, but Charlie had retired. So I found myself a bar and hunkered down to wait. This looked like my kind of town ...

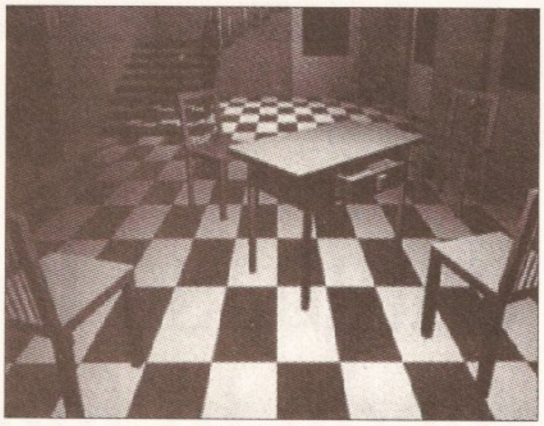
On the third day

Assuming my identity as a journalist, I had a last schnapps and took the subway to the ICC, Berlin's spaceport-like conference centre. The press was assembled and ready to be wowed. A CDTV demonstration was promised.

But it seemed like a bad start when Helmut Jost, of Commodore Germany, spent half the conference talking and we only saw CDTV for around ten minutes. I was impressed by what I saw but puzzled by the strategy of spending so much time talking when what has to be a perfect presentation system was sitting there doing nothing. More on CDTV later ... and on to where the goodies really were – the Show itself.

AMIGA '91 was held in Exhibition Hall Number 1, about a mile from the ICC. There were over 90 stands, holding many and varied products. Games were very much in the minority. German users take their Amigas seriously – and, with a user base of 6-800,000, the manufacturers do too.

There were products for all Amigas, including some particularly good support for our old friend, the A1000 (including 8Mb RAM boards, Fat Agnus adaptors, 68030 boards and so on). There was a lot of German hardware around, from add-on boards for all machines to video genlocks in all shapes and prices. Speaking of prices, I was more often than not gobsmacked by the value for money offered here. Some examples – CDTV DM 1600 (£550), Supra 2400 Plus modem DM 299 (£103), Quantum 105Mb HD DM 1060 (£365), Golem 68030/68882/2Mb 32-bit RAM turbo board DM 1399 (£482). Granted these were show prices, but most of the people I spoke to agreed that prices here are very favourable.



Spankingly clean kitchen floors are just one of the creative possibilities with *Painter 3D*.

Commodore news

CDTV was visible everywhere, running a variety of information display applications. On the Commodore stand itself the system was being demonstrated with two main disks – *Time Table of History* (an interactive encyclopedia of history) and *World Vista Atlas* (a geographical data base). Access is by hand-held remote control and response time to retrieve the selected information from the 550Mb capacity disks is pretty zippy.

Also on display were the A3000T, the tower version of the Amiga, and the A3000 Unix workstation, which Commodore hopes to pitch into the highly competitive Unix market along with SUN and NEXT. Watch this mag for forthcoming reviews.

Video

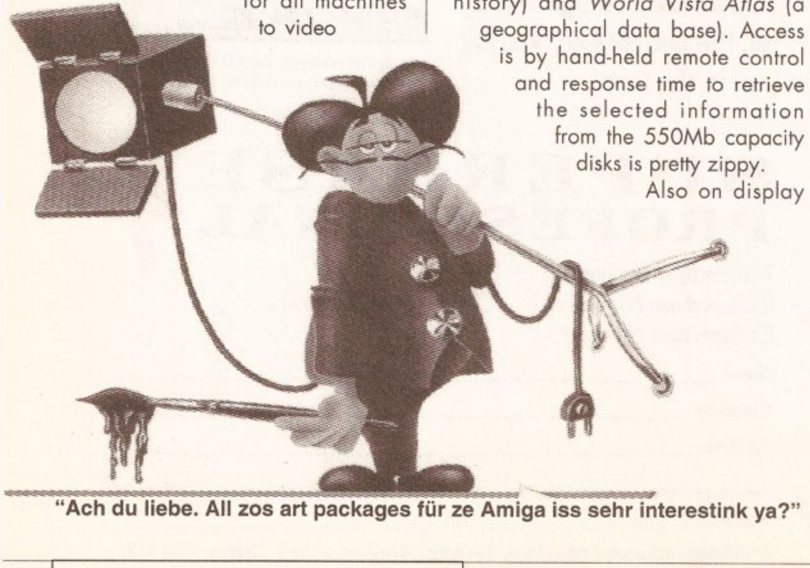
On the Video front there were boxes of goodies for everyone, from the top-flight professional to the aspiring domestic user. There were genlocks, standards converters, vision mixers and effects units.

Videocomp (from Frankfurt) was showing its DVE-10, VES-1 and VES-2 units, among others. The DVE-10 is a digital video effects system for the non-broadcast market which features video signal processing, fades, wipes and mixes, picture-in-picture (with X and Y movement), stereo audio mixing and a built-in digitiser. It has S-VHS and composite output. Price £920. An upgrade to a professional version is available for £100. The VES-1 is a genlock which features fades, wipes and mixes, Digiview hardware, software and automatic RGB splitter, and S-VHS and composite output. Price £453. The VES-2 is simply a VES-1 without the Digiview components. Videocomp produces a wide range of video products. I hope to be reviewing some of them soon.

Anther notable exhibitor was MERKENS EDV, showing its VD-4 video digitiser. This is an external unit capable of grabbing a black-and-white frame in 20 milliseconds or a full colour one in 60ms. Its features include: time lapse, remote triggering (useful in security applications where an infra-red detector triggers the digitiser), all standard resolutions, ARexx and compatibility with all Amigas with at least 1Mb of RAM. It costs £310. Also on show was a range of G2 genlocks and mixers.

LAMM was showing a selection of video units, from its new Intragen and Tune-It! to the slightly older Split-It! and Lock-It! units. Intragen (£690) features a range of wipes, fades and other effects, signal processing, auto-split RGB digitising and a parallel switcher for printer or genlock use. It takes YC and composite inputs, and has auto-switched outputs for YC, RGB and composite. It can also provide non-interlaced output. In use it looks excellent. Tune-It! is a video signal colour corrector (£85), Split-It! is an RGB splitter (for digitising etc) and Lock-It! is a Genlock unit featuring wipes, fades and other effects. The latter pair can be bought together for £240 or separately for £120 and £137 respectively. Picture quality from all the LAMM units was very good. LAMM is also producing a fully professional vision mixer (the Alladyne – at £2550) and a digital standards converter & TBC (the Proteus 4:2:2 – at £2920).

There were also offerings from Electronic-Design (PAL Genlock and Y-C Colorsplitter), Klaus Tute (Digi-Tiger digitiser) and others.

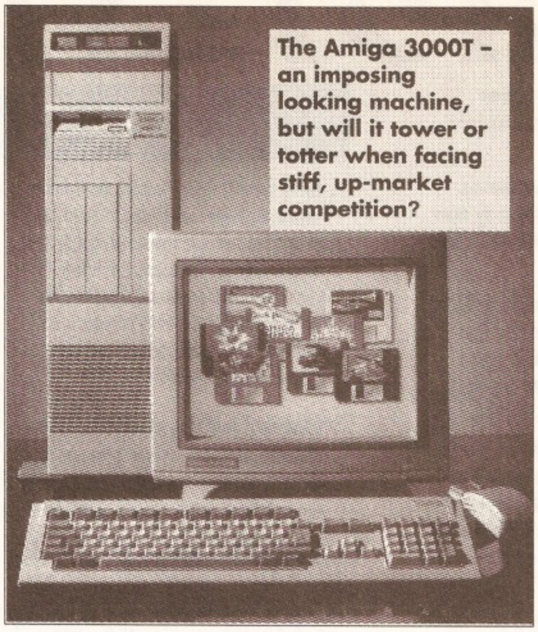


"Ach du liebe. All zos art packages für ze Amiga iss sehr interestink ya?"

On the more creative side there were several 24-bit devices on show. Martin Lowe, of Amiga Centre Scotland, was demonstrating the Harlequin board (along with a brand new 24-bit paint program from France called *TV Paint*). Merkens was showing the VD2001 card (available from G2 Systems in the UK) with complete software package featuring real time graphics and 24-bit digitising, PAL/NTSC RGB genlocking and a digital key mixer. It comes with full ARexx applications, comprehensive filtering and colour correction. A 24-bit paint package is due out for it later this year. MAST was drawing in the crowds with its budget-priced Colorburst package (and orders were high, even though none were available for sale at the advertised price of DM 1199 – £410). I'm glad to say that it looked rather good at that price. Also on show was X-Pert Computer services' 24-bit graphics card Visiona which, unlike current 24-bit offerings, is not a frame buffer. It was very fast in action and its software is written in a new programming language called Cluster. The card can run in any video standard (PAL/NTSC/SECAM etc) at up to 240Hz (standard Amiga monitors run at 50Hz) in order to support many different monitors. It supports resolutions from 200x200 to 2048x1600 pixels. Commodore was using this card in its A3000 Unix machine. It looked splendid.

No wait, there's more ...

Another interesting piece of video equipment on show was the American *InvisionPlus*/LIVE combination. Together, this software/hardware package allows hundreds of real-time video effects and manipulations, video grabbing, video animation looping, cross-fades and software control for the SuperGen genlock. Effects can be mixed between several sources (2 x video and Genlock). As I was watching, almost 20 seconds of 32 grey-scale black-and-white (although it also does colour) video was grabbed from a live camera and played back (on an A3000 fitted with 10Mb RAM). HB Marketing will be distributing this in the UK for around £800.



The Amiga 3000T – an imposing looking machine, but will it tower or totter when facing stiff, up-market competition?

All kinds of everything

All around the show were stands selling everything from 500k memory add-ons for A500s to turbo boards for A1000s. There were hard drives, disk drives, mice, tracker balls, joysticks, flicker fixers, anti-click boards, genlock cards, audio samplers and the like. Of the stands I visited, I was impressed with Kupke Computertechnik (which makes Golem products). The company had a whole range of add-ons for all Amigas, including a new range of 68030/68882 (16Mhz, with 2Mb 32-bit RAM) cards selling at around £510. For the A500 they had an 8Mb RAM expansion for around £405, and SCSI hard drives (with options for up to 4Mb RAM and Kickstart 2.0) starting at £415 for the 50Mb version. I understand that these products are not yet available in the UK.

ICD was also showing a range of products, including the AdSpeed low-cost accelerator, Flicker Free Video for flicker fixing without taking up the video slot in your 2000/3000 (and as it is external it works with all Amigas) and the new Novia 20i micro-sized 20Mb internal hard disk for A500s.

Finally, there were several other flicker-fixers, including 3-State's Multivision 2000 and Multivision 500 (around £160 each) and Ralf Jochheim's Highgraph V for the 2000 (at around £175).

Namby pamby stuff

On the software front there were some very promising new titles. Among these was a new version of the stunning German raytracing and animation program, *Reflections*. Version 2 was demonstrated to me by its programmer, Carsten Fuchs. It features bump mapping, Boolean operations, full multitasking, 3D font creation and libraries and an improved modeller (in addition to its already bulging repertoire). Output from this little baby is marvellous. The only problem is that its distributor, Markt & Technik, will translate the thick, German-language manual into English only if demand is high enough. So, if you're interested, write to me c/o *Amiga Shopper* and I'll pass on the requests. Don't forget that the previous version of this cost only DM 98 (or about £35) – so you should be interested!

Another piece of excellent 3D software was launched at the Show. This was *Painter 3D*, from Swiss company Adept Marketing. It was very fast in operation (okay, it was running on an A3000), and has a whole host of innovative ideas. Some of these are: storing the data for an object once and adding only its new position and colour to the data if it is cloned, bounding boxes for quick movement, zooming to infinity, accuracy to 0.01mm and rendering which takes place from the front of the view to the rear (so that hidden faces aren't rendered). This program should be available in the UK in the summer, once the manual is fully translated, for between £70 – £80.

Cluster, a new programming language from Germany, is claimed to be faster than *SAS C* and compatible with Modula 2. All its features are on the one screen – compiler, debugger and so on. German price DM 340 or less.

Back to Blighty

As I pulled my hat down and walked quietly back to the U-Bahn a punk stopped me on the street. "Got a light, Mac?". Actually, I had no light and no Mac, but then who needs a Mac when Amigas are coming along so strongly now.

I think I'm going to be watching them grow up pretty fast, and that we finally have a machine that we can be proud of. And especially one that will be seen more and more in the world of professional graphics, animation and presentation.

Watch out all you Paintbox, PC and Mac freaks, for your days are surely numbered. AS

At a screen near you...

Some of these products are available in the UK:

VD-4, VD2001 –
G2 Systems, ☎ 0252 737151
InvisionPlus/LIVE and Colorburst –
HB Marketing, ☎ 0753 686000
ICD Products –
Power Computing, ☎ 0234 273000

Wacky applications

Some of the wackier stuff on show (apart from the tango dancers and the clowns with flags) included a one-stop surgery for your Amiga. There was a stand at which a gaggle of manic engineers would rip your Amiga apart, attack it with a hot soldering iron and do instant upgrades. It seemed to be very popular, with a constant stream of A500's being operated on. A very enterprising bunch of loons, I thought.

And then there was the T-Shirt stand. What a good idea! Ingo Reidl's CopyArt 91 group was digitising its victims, hacking them up in *Deluxe Paint* III, adding psychedelic backgrounds and finally, through the magic of science (and some rather expensive hardware which is readily available in most high street copy shops), outputting the result to the T-Shirt of your dreams. £10 to you mate. And very good they are too.



Light up your loved one's life with a thoroughly transcendental T-shirt from CopyArt 91.

As a last note, keep an eye open for Eric Schwarz's Aerotoon series of Amiga animations. *Swiss Army F-16* had them rolling in the aisles! It's good to see that people aren't too wrapped up in the serious side to see the fun of it all.

The price is slight

Prices given are generally for guide only, and should not be regarded as absolute. If the product is available in the UK then, where prices are shown, they are the UK prices.

Presenting PROTEXT 5.0

Five years to the month after Protext version 1 was launched Arnor are pleased to present version 5, an enormous leap forward in both ease of use and performance.

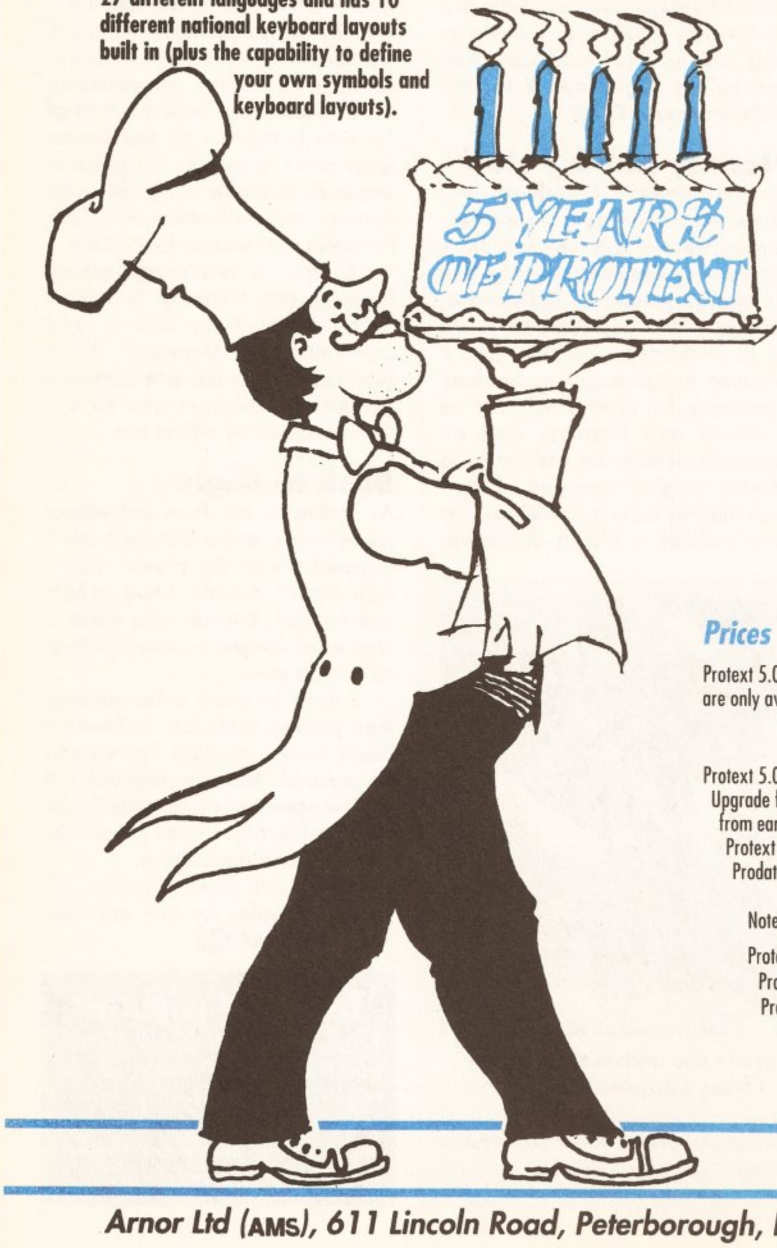
Protext 5.0 introduces a completely integrated system of pull down menus and dialogue boxes. The menus are among the many operations that may now be carried out with either the mouse or the keyboard. Protext really does give you the best of both worlds.

Protext 5.0 handles printer fonts flexibly and accurately. You can make full use of any number of proportional printer fonts, mix them freely within any line, centre them in headers, use automatically formatted footnotes. And Protext correctly formats your text as you type it, no matter how many font changes you use, showing you line and page breaks exactly as they will be printed.

Protext 5.0 is still the fastest word processor around. Even though we have made all these major improvements we have taken great care to ensure that text editing is as fast as ever. The menus work smoothly and quickly even with high resolution displays. But of course, you can use Protext's efficient set of commands and keys just as before and 5.0 remains compatible with all earlier versions from 1.0 onwards.

Protext 5.0 is a worthy successor to version 4, which was described as "the best word processor at any price", "the best text processor on the Amiga" and "the most powerful word processor on the Atari ST" (AUI, ST/Amiga Format, ST User).

Protext 5.0 heralds a new era of multi-lingual European software, in time for 1992 and the opening up of Eastern Europe. Protext may be used in at least 27 different languages and has 10 different national keyboard layouts built in (plus the capability to define your own symbols and keyboard layouts).



The Features

- **New fast & easy to use pull down menu system** with dialogue boxes and alerts; file selector; mouse dragging to set blocks. Menus complement existing commands and keyboard shortcuts, do not replace them. Menus may be used with mouse or keyboard. Amiga version follows Intuition guidelines.



- **Enhanced printing capabilities** supports multiple proportional fonts; mixing of different font sizes on the same line; proportional formatting whilst editing; side margin, headers and footers independent of main text font. Tabs, decimal tabs and centre tabs. Extensive range of printer drivers supplied.
- **Multiple file editing** - up to 36 files may be open; split screen editing.
- **Graphics mode support** on PC allows use in virtually any text or graphics mode including 132 column or 75 line VGA modes; user defined characters and on-screen bold, italics and underlining now on all versions; use of 13 different accents on any character.
- **Language support includes** Albanian, Basque, Czech, Danish, Dutch, English, Esperanto, Estonian, Flemish, Finnish, French, German, Hungarian, Irish, Italian, Latin, Lithuanian, Norwegian, Polish, Portuguese, Rumanian, Serbocroatian, Slovak, Spanish, Slovene, Swedish, Welsh. (Note: some printers do not support all languages).
- **Index and contents** generation. Indexer takes marked words or phrases; contents entries automatically taken from titles wrapped in control codes; many options for style of contents output.
- **Spelling checker** features completely new 110,000+ word Collins dictionary with very fast phonetic lookup. Anagrams and find word pattern. Foreign language dictionaries (German, Swedish available now, others to follow).
- **Many other enhancements** including multi-line footnotes and endnotes; automatic timed save; add column or row of figures; indent tabs; find word at cursor; 40 column mode support; sentence operations; inter- paragraph space; much improved expression evaluator; self incrementing variables; Roman numerals; newspaper-style column printing; file sorting utility with special options for names and addresses; revised manual plus new tutorial guide.
- **And don't forget Protext still includes** background printing; box manipulation; macro recording; exec files; headers and footers; find and replace; mail merging; undelete; file conversion utility; configuration program; auto reformatting; on screen help; time and date; typewriter mode; line drawing; disc utilities.

Prices

Protext 5.0 may be purchased from any good computer shop or directly from Arnor. Upgrades from earlier versions are only available from Arnor and the original discs should be returned with your order.

	PC	Amiga	ST/TT	Archimedes
Protext 5.0	£149.95	£149.95	£149.95	£149.95
Upgrade from v4.2	£60	£60	£60	N/A
from earlier versions	£75	£75	£75	N/A
Protext 4.2	£99.95	£99.95	£99.95	N/A
Prodata 1.1	£79.95	£79.95	£79.95	due 1991 Q1

Notes:

Protext 5.0 requires at least 640K of memory on all machines
Protext 4.2 requires at least 512K of memory on all machines
Prodata requires 1MB of memory on the Amiga

ARNOR

Arnor Ltd (AMS), 611 Lincoln Road, Peterborough, PE1 3HA. Tel: 0733 68909 (24 hr), Fax: 0733 67299

TALKING SHOP

Paying scant regard to his own safety, Bob Wade dives head first into the huge pile of mail lurking menacingly in the corner of the office and emerges triumphant with the following missives which earn their scribes £5. If you want to join them on these pages then write something excruciatingly interesting and send it to: Talking Shop, Amiga Shopper, 30 Monmouth Street, Bath BA1 2BW



Fear of repetition

I am worried that the contents of *Amiga Shopper* may be limited to reprints of your sister magazines' features. I just cannot see how three magazines can be published by the same publisher, about one computer, without a considerable overlap of information contained.

David Fairweather
Blackburn
Lancs

I can assure you David that we will not be doing any reprints. We are a completely separate team to any other mag at Future Publishing and although we may review the same programs and hardware occasionally, the reviews are done by different people without collusion.

As for overlap between the magazines, I think anyone who has looked at AS and compared it to any of the other Amiga mags will agree that we are not competing with any of them, but are catering for a separate need for our readers in terms of serious computing.

Shareware bunch

If I like shareware, I want to pay for it. This leads us to catch 1: If you wish to pay by foreign currency you have a minimum charge of £2.50, plus exchange rate, plus bank exchange rate – result over-inflated prices.

You get the cash, then you have catch 2: How do you know the people 'selling' the software are still available. Obvious answer – write them a letter.

As you can see, paying for shareware is fraught with problems. However I have a solution. Is it possible for your magazine to provide an updated list of shareware authors who are able to supply the updates? Then those of us who are prepared to pay the authors can have a reasonable chance of getting a reply.

And if anyone knows of a bank which gives a good rate of exchange or an overseas reader who wants to buy goods from the UK using dollars then please let me know.

James Abram
Wolverhampton
West Midlands

It's a nice idea, but maintaining and printing a list of shareware authors is a huge job. What might work is to have such a list on a bulletin board, which the authors could update themselves whenever necessary. If someone sets up such a service, we would be delighted to publicise it.

Utils out for the lads

I would like to make a suggestion for one of your reviews, bearing in mind the large number of Amiga users who now own hard drives. There are to my knowledge only two packages for the Amiga which resemble *Norton Utilities* on the PC, these being *Quarterback Tools* and *Dunlap Utilities*, both of which cost around £50 and are available in the UK. Like most people, before I would consider spending such a large sum of money, I would like to read a good in-depth review of both packages showing both the good points and bad.

Andrew Roddis
County Antrim
Northern Ireland

You will be delighted to hear that we are indeed planning a review of Quarterback Tools – we'll try to do Dunlap as soon as possible as well.

Money for something

Concerning your *Amiga Answers* section, is it not possible to have a system similar to *What Video* where a query can be sent in with a cheque for £2.50 and an SAE for a personal reply, this would I believe be a first (and I believe essential) for a serious computer magazine as answers take such a long time to appear in magazines (IF they do at all) and by the time they do the problems have probably been solved. I believe your readers would welcome this service and at the same time you would be making money, and as they say 'check it out'.

G P Scott
Bognor Regis
West Sussex

It's an interesting idea but, for a computer magazine, not a very cost-effective one. Most of the queries we receive require a lot of research to answer and when there are magazine pages and 50,000 readers at the end of that process it makes sense. However, the sort of technical support service you describe would cost a lot more than £2.50 per query to run. It would also require a massive increase in staffing levels and overheads. I still believe that if you need a quick response to a problem the best way is via bulletin boards, user groups or individual company's technical support service. If it isn't urgent then Amiga Answers is your best bet – many others may be having the same problem as you and will appreciate the answer too.

Amiga vs Amiga

I imagine I'm not alone in being ready to move 'up-market' from my A500 without knowing what to buy, the number of choices seems to increase almost monthly. Magazines dedicated to the Amiga offer little help, reviews have generally lacked substance and have subsequently often been contradicted by the same magazines.

Please could you remedy this by providing in-depth comparative reviews of the 1500, 2000 and 3000 computers. To enable you to give you them the space they deserve perhaps you could spread the reviews over three separate issues.

Philip Burman
Ulceby
South Humberside

Would it be possible to do a round-up of all the machines in the Amiga range, to give an idea what each machine is capable of and also to point prospective buyers of the machines in the direction of the best machine for their needs.

Colin Macleod
Glasgow
Scotland

A stupendously good idea – which is why we're doing it in issue 7. We are well aware that many people will want to know how best to upgrade or be new owners who haven't got an Amiga yet, so we will be catering for them. Between now and then we will also be trying to point out the best deals for those wanting to buy Amigas themselves.

Smoking mice

Whilst telephoning my bank manager for another extended overdraft, I discovered a fantastic money saving tip! Instead of forking out up to a fiver for a mouse mat, you can use the frictional surface of the yellow pages (I had it open under banks) which is ideal for mouse contact. Please send me a fiver so I can start marketing this idea plus the range of mouse house which I have also 'invented'. These

continued on page 14

continued from page 13

come in various designs called Silk Cut, John Player etc and are easily attached to your TV or monitor using blue tack.

Michael Pun
Strichley
Birmingham

I too have discovered a brilliant money saving tip – stop smoking and you will be able to afford a proper mouse mat (and as a side benefit improve your chances of not dying of lung cancer).

Helping hands

Just where does one turn for help and guidance on, what for the experts, are just the basic setting up problems? Sitting up for hours, struggling with manuals and pressing every key in sight is certainly mind bending. I have joined the Leicester-based Amiga Users Club but, to be honest, phoning a Leicester number during the day is a mighty expensive way of solving a simple problem. It may take several calls even to get to speak to the expert concerned. Phoning my supplier is just the same problem. Don't think in any way that I am knocking them because they have been more than helpful in every way ... but the cost!!!

My question for *Amiga Shopper* is therefore: "Where can one get help on these issues? Are there local Amiga Clubs for newcomers and general dimwits like me to get enthusiastic and sound advice on the simple problems of setting up and starting to use the hardware?"

Peter Steadman
Calne
Wilts

The easiest way is to actually attend a local user group meeting where experts (or people who think they're experts in some cases) are always on hand. We will be bringing you regular info on user groups – check out page 119 for some helpful contacts.

An interesting hat

I have a rather interesting hat with 'Amiga' (spelt incorrectly 'Omiga') embossed on it!!!?? Do I get a fiver?

J Cross

No.

Keep on running

I am a member of a local running club called Wyvern Road Runners and we stage an event called the Wyvern Christmas Cracker 10K Road Race. For the past three years my Amiga has been used to provide the race database and results.

I personally have written a program using *HiSoft Basic* and *Compiler* (v 1.05) that will give full service on race day.

This involves taking information from the database which has been set up using *Superbase* 2 and matches the times and running numbers of those finishing. The result is a full listing of results showing placing, name, club, category and time. The program also automatically produces team results and category results. At any time the current situation can be monitored with the latest results being sent to screen or printer. I have heard of such packages on other machines, but not the Amiga.

It is pleasing to note that my program has also been used by other races and that interest has been shown by further Race Directors. This I feel is very encouraging proof that the Amiga can get serious and should not be viewed purely as a superb games machine. It is much more!

Nigel Barker
Weston-super-Mare
Avon

It sounds like a handy program, so why not put it in the public domain and upload it to some bulletin boards so everyone can take advantage of it?

Desktop duel

I am attempting to use my Amiga as a professional tool in the competitive world of desktop publishing and many Mac users have been startled that it can produce results every bit as good as their machines and at a fraction of the cost ... BUT!

They have some major advantages over us Amigans. Because the Mac has been adopted as the industry standard the amount and quality of software and hardware available for it is huge and I would hope that you and us, could prod, cajole, threaten, charm, flatter and entice manufacturers and developers to dare to compete with (even lead) those damn Macs.

Let me start by mentioning what I believe to be a major disadvantage of our software. This magazine seems to agree that *ProPage* is probably the best DTP package available for the Amiga and it seems to work well enough, but the range of available fonts is terrible. There are quite a few of them but they seem to have been chosen more for their suitability to the ubiquitous church magazine than the stylish world of 'the media' or the modern business. As for the collection of horrors *Pagestream* offers – even if it were the absolute best DTP program, I wouldn't buy it if it meant being stuck with them. Next time you see a smart looking ad or piece of graphics, see if it could have been done on the Amiga – the chances are it couldn't, because the font, or a font like it, isn't available to us. This may be one area where your magazine might help. It would obviously carry more weight with any software developers if shortcomings in their products were aired in public and hopefully foster the necessary client care attitude that Mac users enjoy.

It is an indisputable fact of life that the bureaux necessary for such things as 'bromides' (not a drink to quieten me down but a fantastic, photographic quality print out) are set up for, yes, those damn Macs again. One way software developers could help us would be by building bridges between the Mac and the Amiga. We need to be able to use their technology, to import their files and convert their saved data to ours and vice-versa. What if you are asked to take over a series of ads for a company but have to turn it down because all their other material is incompatible with your machine. What use the high quality scanners in the bureaux if we can't use their output. But maybe we are more compatible than I think and this is, I believe, a major role for your good selves. To seek out where no-one has sought before, those programs to help with compatibility and to suggest how they might be used to infiltrate the smug ranks of the Mac.

For instance, I noticed in a recent issue of your sister magazine *Amiga Format*, mention of the "many PostScript interpreters like PixelScript"! Please tell us more, does this mean that we could take a file from *Quark Express*, albeit a PostScript version, and load it into *PPage*?

Ron Cavedaschi
Brighton

Good points Ron and hopefully we will be able to help you out and answer your questions when we review Saxon Publisher and a Postscript printer in a forthcoming issue (probably issue 5).

There's too much jargon

Although I have not, as yet, purchased an Amiga, I intend to do so as soon as I have decided whether the A500 or the A1500 is most suitable for my needs. The trouble with all computer magazines is that they all assume that the reader is both cognisant of and competent in 'computerspeak'. With my generation a Megabyte is something inflicted by next door's dog. I am fast approaching 60 years of age and when I went to school learning was done with chalk and slate and a very large cane. So purchasing the first issue of a magazine and and finding it full of references to *AMOS*, ROMs, RAMs and the like tends to floor folk like me.

The thing I would like to see is a page or two devoted to those of us who haven't the foggiest as to the difference between hard disks and floppy ones or what screen-dumping is.

What I really need is a machine that will be useful as a games player and yet still enable me to write the newspaper for my granddaughter's Brownie pack. Would the Amiga A500 be sufficient, or would I need the A1500. I made the mistake of going to the computer shop in Aberdeen. After an hour of being given an ear bashing on the subject, I left not knowing the difference between the two.

So, how about a column for us pig-ignorant bunnies who look upon their computer as that fearsome thing that hums away quietly, until we 'key' it into life and then does marvellous things which we know little about and understand less?

Rex P Macey
Huntly
Scotland

I wonder if I'm the only reader of your excellent magazine who doesn't own a computer. I haven't taken the plunge simply because I'm not sure how to start.

All the magazines, and this includes yours, seem to cater for the experienced user. Unlike magazines on hi-fi or video equipment, which do have articles for complete beginners, all the computer mags seem to ignore the potential buyer.

My requirements for a computer are:- desktop publishing (you can tell that I am learning all the right terms!), video titling including genlock for captions etc, and word processing. I have decided on the Amiga as it seems the best-all round machine. However, knowing what to buy is another matter. Which programs will be best for a beginner? Which printer? Which monitor etc? Please devote at least some of your editorial to the many people like me who are just a bit wary of taking the plunge.

Richard Malin
Leamington Spa
Warwickshire

We will be continuing to try to cater for absolute beginners, but I don't want to ghettoise you into one section. Where relevant we will run specific one-off features aimed at beginners and continue incorporating learner boxes on as many columns and features as possible. As for whether you want an A500 or A1500, you could probably cope with the A500 with some extra memory tacked on to run a decent desktop publishing program. However, if you want more expandibility and intend doing some serious DTP work then go for the A1500.

AMIGA ANSWERS

Send your questions to: Amiga Answers, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW

We've assembled the best panel of Amiga experts in the country and every month they'll be putting their heads together to help solve your problems. Be they trivial or be they techie, Amiga Shopper has got all the answers

Q

Got my back up

I purchased a second-hand *X-Copy Professional* with *Cyclone* 3 through a mail order advert. After reading a number of ads and reviews, I thought that *Cyclone* 3 would back up IBM and ST formats for use on my Amiga. I went to a computer sale of bankrupt stock and purchased over a hundred pounds of DTP software and other items.

My *X-Copy Professional* plus *Cyclone* 3 will not copy any of the items. I have been looking at the Datel Electronics *Syncro Express* 3 and the Supercard Am II. Will they help solve my problem?

Mr S Francom
Chippenham
Wiltshire

A

It does not matter which back up utility you buy. Programs written for a computer such as the ST or IBM will simply not run on the Amiga. The Amiga is a different machine and programs must be written to cater for its own peculiarities.

The only possibility of making your programs work is by using an ST or IBM emulator. For the ST, you might like to try out *Chameleon*, available from George Thompson Services (☎ 077 082 234) .

On the IBM front, the two main alternatives are the KCS PC Powerboard from Bitcon (☎ 091 490 1919) reviewed by Mark Smiddy in the last issue of *Amiga Shopper*, or you could try the Vortex ATonce board available from Silica Shop (☎ 081 309 1111), which is reviewed in this issue on page 105. ***CR***

Q

Sine here

I saw a demo with some writing coming on the screen in the form of sine waves, so I thought I would try that out. I set about trying to accomplish the task via AMOS. However, after an hour or two I unavoidably got stuck. Please could you help me because I'd love to be able to see my text appear in sine waves.

Gareth Griffiths
Waterloo Port
Gwynedd

A

Hmm. An hour or two seems like an awfully short time in which to get wibbly wobbly text together.

The way I went about testing a solution was to use a string to hold the message in. This string is printed, one character at a time, on the right-hand side of the screen. Its vertical position is decided by the sine function, but it must be scaled according to the dimensions of the screen. After printing each character, I used the AMOS Hscroll command to move the whole of the screen one character space to the left.

I kept a track of the next character in the string due for printing in the variable POS. Once this has exceeded the length of the string, it is set back to a value of one so it prints the message again from the beginning. I used a separate variable to hold the angle to be used by the sine function. This is incremented by 1/12th of a radian after every character. The actual listing is very short:

```
MESSAGE$="This is a program
to demonstrate scrolling text
in the shape of a sine wave"
POS=1 : LASTPOS=Len(MESSAGE$)
X=39 : ANGLE#=0
Do
Hscroll 2
Y=Sin(Angle#)*11+12
Locate X,Y
Print Mid$(MESSAGE$,POS,1);
POS=POS+1 :
ANGLE#=ANGLE#+Pi#/24
If POS>LASTPOS Then POS=1
If ANGLE#>=Pi#*2 Then
ANGLE#=0
Loop
```

If you want smoother results, the best bet would be to create a BOB for each of the letters. These could then be placed using more accurate coordinates (320*200 instead of 40*25) and scrolled smoothly instead of by a single character space at a time. ***CR***

Q

Begin the benign

I recently found a PD disk with a virus. A message came on the screen when I tried to boot it. I got hold of *Virus X* and found that many of my disks had viruses. All of them worked, though. Would the viruses have wiped them or something, or would it have been alright for me to leave them on? They seemed to be doing no harm.

Stephen Kent-Taylor
Welwyn Garden City
Herts

A

Some viruses are benign. They print a 'witty' message on the screen and otherwise leave things alone. But the vast majority are malignant. My advice is to kill them all on sight, benign or otherwise. A virus may well pose as benign and be doing something unspeakable to your disks without you being immediately aware of it, the swines.

However, *Virus X* has a tendency

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AMIGA TIPS

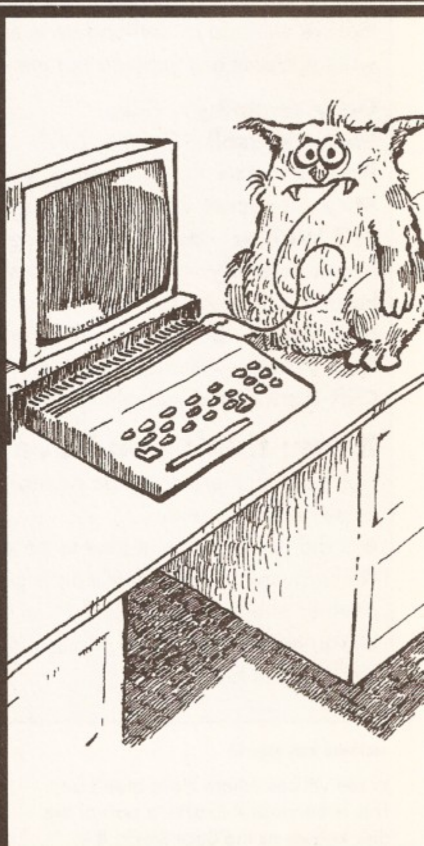
Stuart Hardy, of Wales in Sheffield, offers this advice for revamping rodents:

One of the most irritating problems with the mouse occurs when its buttons lose their sensitivity and there is little or no response when you press them. This comes about when the pressure pads inside the mouse become slightly dented from heavy use.

However, there is a simple remedy to this. First, find a piece of card. Then open the mouse and cut the card to the size of the pressure pads. Tape the card over them and put the mouse back together.

Now whenever you press the buttons, their response should be as good as new.

And our response is wending its merry way towards you right now in the form of a nice, crisp fiver.



It just isn't quite the same somet

WHATEVER YOUR PROBLEM WITH THE AMIGA, WE ARE HERE TO SOLVE IT

That's the task we have set ourselves in giving you the best possible support for your Amiga. We are confident that our experts can cope with anything you can throw at them. If they don't already know the answer to your problem, they will find it out. Read on for some of the typical, and obscure, problems you may encounter when trying to get the most out of your Amiga.

CONSULT *AMIGA SHOPPER'S* EXPERT PANEL

We are prepared to deal with any problem you have with the Amiga, from general enquiries about AmigaDOS or workbench, through questions about specific pieces of software and hardware, to advice on what you need to buy to do a particular task. If it's to do with the Amiga, we will help out. What we cannot do is offer this service over the telephone – **do not phone us with your enquiries**, but write or fax us at the address and number below.

We also cannot enter into personal correspondence – all enquiries will be dealt with in the pages of the magazine. This does mean a bit of a delay in solving your problem, but we will come up with an answer for you. You'll just have to be a little patient and wait for it to appear in print.

Send your questions to: Amiga Answers, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. Fax: 0225 446019.

The *Amiga Answers* panel consists of all three consultant editors – Jeff Walker, Mark Smiddy and Phil South – and of course resident technical editor Cliff Ramshaw. We will also be calling on the services of all our other contributors, so you won't be able to catch us napping on any subject. Each panelist will be dealing with queries in their own specialist area and it would help us greatly if, when writing, you label your query envelope with the name of the expert who can solve your particular problem. Below is a list of their areas of expertise. It's a list that we will add to and update every month so you will know who to write to about any subjects not mentioned here.

Gary Whiteley – Video.
Stuart Russell – Comms, CAD.
Paul Overaa – programming, music.
Mick Draycott – hardware, programming, MIDI.
Jeff Walker – desktop publishing, programming.
Mark Smiddy – AmigaDOS, business, CDTV, hardware projects, hard and floppy disk drives.
Phil South – public domain, graphics, AMOS.
Bob Wade – American football.
Cliff Ramshaw – anything else.

If you think you have been ignored...

Don't panic, there could be several reasons why your question has not appeared this month:

- It did not reach us in time to be included this issue.
- The answer to your question is given as part of the answer to another published this month.
- You have not given us enough information in your letter to answer the question fully.

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to see viruses where there aren't any. This is because it checks a part of the disk known as the Boot Block. If it sees a non-standard piece of code there, it assumes that it is a virus, but many PD disks come with non-standard Boot Blocks which are not viruses. The solution is to get hold of a better virus killer, such as *ZeroVirus* from the Public Domain. ***CR***

Q

Huge RAMifications

How can I expand the memory of my Amiga 500 to around two-and-a-half to three megabytes so that I can run *Pagesetter*, my art and my word processing packages at the same time, and how much can I expect to pay? If it is not possible to do this, have you any alternative suggestions as to how I can overcome the problem of not having sufficient memory for this kind of multi-tasking?

I would be most grateful for any advice you could offer.

David Toyne
Middlesborough
Cleveland

A

There are now several memory expansions for the A500 which will take it past one Mb. One you might check out is the Cortex Expansion from Memory Expansion Systems (☎ 051 236 0480). Prices start at £279 for 2Mb of RAM. The expansion plugs into the Amiga's side expansion slot, but duplicates this slot so that other things such as hard disks can be plugged in afterwards.

Alternatively, if you are going to be doing a serious amount of work on your Amiga, it might be worth buying a hard disk drive. Most of these can have RAM put inside them. Check out our *Hard Drives On Trial* feature in issue one of *Amiga Shopper* for more details.

At any rate, I would not expect too much in the way of multi-tasking. Having solved your memory problem, you will probably find you have a speed problem. Trying to run three large, processor-intensive programs is bound to slow things up somewhat. It might be a good idea to see if you can run your three programs together on another machine before making a substantial investment. ***CR***

Q

Vector hector

I have tried to type in the listing in Jolyon Ralph's *Vector Check*, but after pressing RETURN at the end of line 1 I get the reply 'Unknown command Opt'.

What am I doing wrong? Or, what elementary instruction for beginners have you left out by assuming we would know or realise it? Should I be in AmigaDOS via CLI? Should I have opened some sort of file first? (If so, which one and how?) Or should I be in *Amiga Basic*, or is this type of listing only suitable for owners of the programs listed at the end of the article (*Devpac*, etc)?

I am also coming unstuck when trying to transfer a file from a directory in a disk in df0: to a (differently named) directory of a disk in df1:. Can you please help?

W T Arbon
Polegate
East Sussex

A

The listing in Vector Check is an assembly language program. To enter it you need an assembler, such as those you refer to which are recommended at the end of the article. An assembler will convert the listing into something called machine code. Once this is done, the machine code will run as a program with no further need of the assembler.

As for your other problem, it is difficult to decide from your letter exactly where you are going wrong. The only thing I can do is give an example. Suppose your file is called 'Ulysses' and is in a directory called 'Joyce' on the disk in df0:. To copy this into a directory named 'Obscure' on the disk in df1: you would type the following:

```
COPY FROM df0:Joyce/Ulysses
TO df1:Obscure
```

The names of the drives must be followed by colons; directories are followed by slashes. AmigaDOS will realise that 'Obscure' is also a directory and place your file inside it. However, if 'Obscure' does not exist, then your file will instead be copied onto the disk and named 'Obscure'. To avoid this, make a directory on the second disk before doing the copy by typing:

```
MAKEDIR df1:Obscure
```

However, if you want to copy the file 'Ulysses' across and give it a different name, you would have to use the COPY command in the following way:

```
COPY FROM df0:Joyce/Ulysses
TO df1:Obscure/Odysseyus
```

If you are feeling really adventurous, you can miss out the TWO and FROM words: they're just put in there to help make the operation look a little clearer. ***CR***

Q

Non iconic memory

When using the Workbench, what rules does the Amiga use about displaying files as pretty icons? I have some disks for which, to see the whole file list, I have to enter the Shell and type DIR.

One example of this is with *Music X* samples. They appear

continued on page 18

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in the windows as rather charming CDs but when I save samples I have created myself to the same disk, I just can't see them.

Permanently Bewildered
Sussex

A

For any file to be shown as an icon on the Workbench screen, it must have a corresponding file with it that tells the Amiga what the icon looks like and whereabouts on the screen it should appear. This other file is called a '.info' file. It has the same name as the normal file, but ends with, surprisingly enough, .info. This file must be in the same directory (or drawer) as the file to which it corresponds. If you want to give your own *Music X* samples icons, it is a simple matter to copy the existing icons using the Shell. Firstly use the CD command to go into the directory in which the samples are stored.

Assuming one of *Music X*'s samples is called 'Sample1', and one of yours is called 'Mysample', type in the following information:

```
COPY FROM Sample1.info TO
Mysample.info
```

Upon leaving the Shell, you will find that your own sample has exactly the same CD icon as that of *Music X*. The only problem is that both will be attempting to occupy exactly the same part of the screen. To remedy this, simply drag one of them into a blank part of the window. While it is still selected, move up to the Special menu on the Workbench screen and select Snapshot. This will remember the new position of the icon. ***CR***

AMIGA TIPS

Another fiver goes out to Ian Moran of Belfast, who suggests the following fix for users sick of the 10-inch page length restriction of the Hp_LaserJet Preferences printer driver:

The first remedy involves changing the bytes at sector 10 offset 15E from E5 80 D0 81 to read E7 80 90 81. This is easily achieved using a file editor such as Newzap on a COPY of the HP_LaserJet file. This will give a 14-inch page length, although the driver imposes its own half-inch margin at the top of the page. This finally allows full page A4 printouts from the likes of *Professional Page, Pagestream*, etc.

The alternative is to get a copy of *JAM* disk #2 which contains new drivers for both the Laserjet and Deskjet printers written by a guy called Svante Gellerstam. As well as providing increased speed, they use Preferences page length settings to determine how long a page image is. This means you can print out documents that are longer than 10 inches.

With this driver I have found that printing from *AmigaVision* or attempting to print a rescaled page from *Professional Page* will cause a Guru. For this reason, I keep both the patched driver and the updated driver in devs/printers and select the appropriate one for the job.

Q

Spec-chum checksum

I am used to writing assembly language on the Spectrum, but understand nothing about the Amiga's assembly language. I would like to know if it is possible to have an Amiga assembly program in decimal, something like:

```
ld a,255; ld de,6912; ld
ix,16384; call 1366
```

If it is not possible, I will have to go back to my Spectrum.

C Elias
Holland

A

Although assemblers use hexadecimal as standard (that is, numbers whose digits range from 0 to 15), they will all allow you to use decimal numbers if you prefer. It must be said that although hexadecimal looks a little strange at first, once learnt it becomes very easy to use and gives a great many advantages over using decimal numbers for assembly language.

The Amiga's 68000 processor uses different instructions to those of the Spectrum, so you would have these, too. But again, you would be in a better position having done so, because the 68000 is much more powerful and actually much easier to program. And the best of luck with your endeavours. ***CR***

Q

Faster files

I have an A500 which is expanded to 1Mb, plus an

Q

Zoologist finally foiled filleting squished Fish

Recently I purchased Fred Fish disk 267 which contains Amiga *Matlab* and *Diglib*. However, both of these have been archived using Zoo, and herein lies my problem. How do I obtain working copies of these programs? Here is a diagram of the disk's structure:

AmigaLibDisk 267:

C (dir)	Matlab (dir)	Diglib (dir)
Zoo	matlab.zoo	diglib.zoo
Muchmore	...	...

I have two disk drives, an Amiga with 1Mb and I have a fairly basic knowledge of the CLI.

Christian Beardah
Staveley
Derbyshire

A

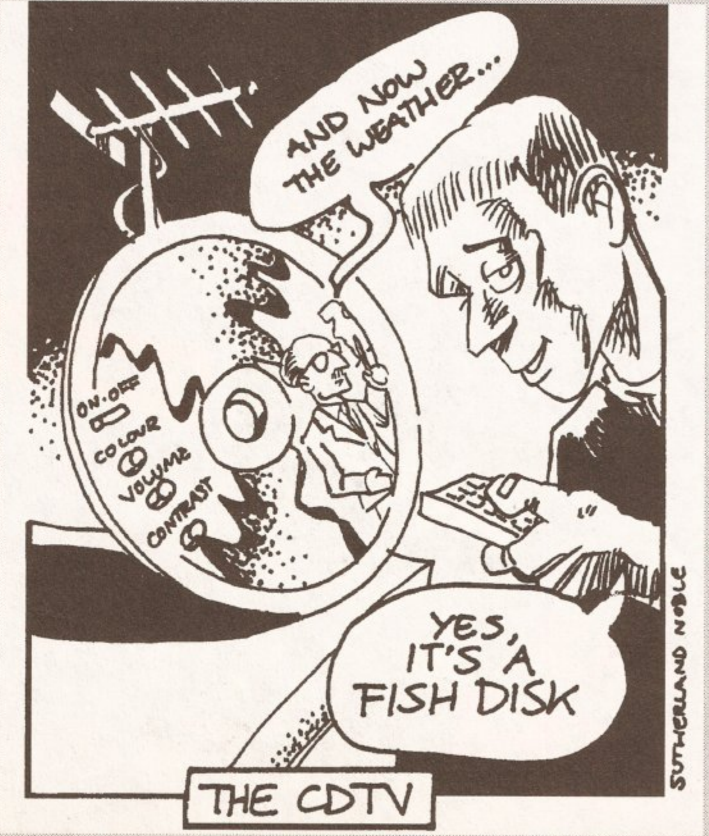
Firstly, put the disk you want to put the files on to in your external drive. This will have to be blank, and the chances are that you will have to use one disk for *Matlab* and another for *Diglib*. Put the PD disk in your internal drive. Now, from the Shell type:

```
CD df1:
df0:c/zoo x/ df0:matlab/matlab
```

This will un-archive (if such a word exists) the programs held in the file matlab.zoo in the matlab directory, placing the resulting files in the current directory, which is your blank disk. If the PD disk does not have the CD command in the C directory, you will have to make it resident before you begin by typing the following:

```
resident sys:c/cd add
```

The procedure is the same for the other directory. Simply change the names in the last part of the Zoo command. ***CR***



A590 hard drive. I run *Superbase Personal* 2 and would like to get the computer to run it more quickly.

I have at present 12 files in the database. The main entry file has some 35 fields in it, and contains all of the calculation and look-up details. This file is kept empty and always loaded to RAM. As each batch of entries is imported to the RAM file, they are exported to a storage file. As there are too many fields to be seen at once, it has to scroll through the fields before I can save it. This obviously slows down the process. I have tried setting it up in interlace mode, but the eye strain is too much.

I have had to alter the definitions in the RAM file at odd times, and then had to import all of the records in the storage file back into the RAM file so that they can be updated. It takes 11.75 hours to complete the job. The storage file is 3Mb at present and growing fast. The whole process of saving, exporting and generally running the database appears to be very slow. What avenue must I pursue to give me this increase in speed?

K M Whitehouse
Watton At Stone
Herts

A

The information regarding your database set-up with *Superbase* 2 is a bit sketchy and insufficient for me to give a definitive answer here.

Naturally, the import and export of files is a long process and one that is rarely necessary. You don't say if the existing 12 files are related, and one entry file to hold 35 fields does seem a bit excessive. At this stage my only suggestion is that you check that you are not duplicating information from one file against another, link imported and exported files to key fields and look to see that you really need all of the information you are recording. If the answer is an emphatic yes, then I would say that you'll have to learn to live with this malady. I know of no other product which would solve the problems you have described. ***MD***

Q

Modulator muddle

My A500 is connected by a standard Amiga modulator to the Video In socket of a domestic VHS VCR. The VCR's Video Out socket is then connected to a standard 1084S monitor. I can thus record any output from the Amiga, while using the computer as usual.

The quality of the 'straight-through' video signal is reasonably good, although some colours, red in particular, are very blurred. Recorded screens are poor, due in part to the age and condition of the VCR. My questions are these: is there a better way to take the Amiga RGB/video screen output and put it onto video tape, in real time? How much difference would using an S-VHS system make?
I would also like to know of any flatbed colour digitisers available, suitable for capturing postcard-size photographs.

Andrew Barnes
Abbots Langley
Herts

A

I can't think of a worse way of recording video signals from the Amiga! Your modulator is converting the Amiga RGB signal into an RF signal (the lowest form of TV signal), which is then sent to the aerial socket of the TV or video. This conversion will immediately downgrade the signal. As a result, the picture on your 1084 will be correspondingly poor, as I presume you are connecting to the CVBS input.

The biggest problem is the modulator, which will cause smearing of the reds in particular and also other colours such as dark blues. If you were to replace the modulator with an inexpensive genlock I think you would enjoy much better images.

If you can afford it, try to get a genlock that will allow you to pass the RGB through to your 1084. Then you can connect the SCART connector for normal use and still take a feed from your video to the 1084. Switching the CVBS/RGB switch on the front of the 1084 will allow you to swap between the two signals, although you may find that you have to disconnect the SCART cable to see a stable video picture. Using S-VHS would actually make only a minimal difference if you continue to use a modulator. The only improvement will be in the quality of the recording of your poor-quality video signal. As they say: Garbage In = Garbage Out. Of course, if you were to use an RGB to S-VHS device (such as one of the newer genlocks) then you'll get improved quality all round.

As for flatbed scanners, you could try the Sharp JX-100 (around £650). Failing that, have your pictures scanned by a bureau. ***GW***

Q

Size isn't everything

I have read in the Amiga manual that drive DF2: is reserved for a 5.25" floppy disk and want to know if I can plug this extra drive in directly or if there is any modification needed to Workbench or anything else?

G Porter
Snodland
Kent

A

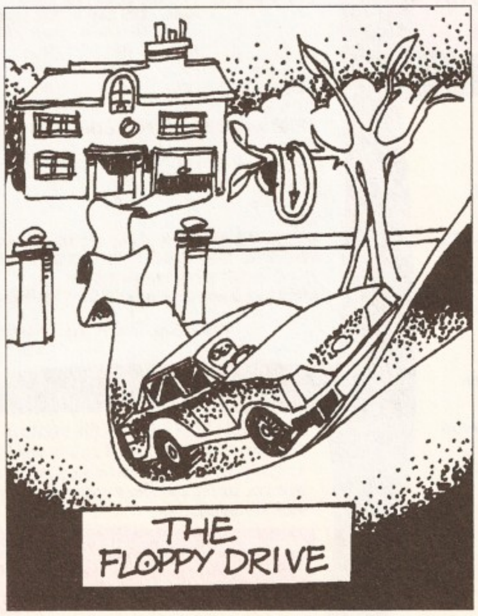
Personally, I have never seen much point in adding a 5.25" drive to the Amiga unless you intend to use it in conjunction with the PC Bridgeboard or something similar. Much of the existing PC software is available on 5.25" disks and therefore I can foresee a demand for it. I will admit that 5.25" floppies are cheaper but I have also found them to be more unreliable than their 3.5" counterparts. Regardless, the 5.25" drive is less sophisticated.

Any combination of 3.5" or 5.25" drives may be added internally or externally to the Amiga. Provided that you have the correct 5.25" drive and cable it can be plugged into the rear of an A500/A2000.

By correct, I am referring to either a model 1020/2020 or its equivalent. Your Amiga dealer will be able to help you here. I am afraid you can't just plug in an Apple or BBC 5.25" drive, but with those points in mind, no further software need be purchased.

If you intend to use the drive with a Bridgeboard, this would be better served by connecting it directly to the Bridgeboard. The Amiga will not have access to it and therefore it

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AMIGA TIPS

Richard Hill, of Cosham in Hants, proud owner of a once dead but now resuscitated A590 hard disk, offers this little tale:

If your hard disk data becomes badly corrupted but the startup-sequence remains intact, the machine will always boot from the hard disk when using the latest version of Kickstart. This means that the machine will always lock up before you can get down to the job of sorting out the hard disk. It is impossible to break into CLI during startup and stop the load from the hard disk.

Now, and this is where the guarantee takes a long jump off a very short cliff, you need to open up the A590. When you have got the top off you will see a power connector plug for the hard disk motors at the rear of the machine. With the power still off, unplug this connector, ensuring that you know which way round to reconnect it. Power up the system, including your hard disk, with your hard disk utils disk in drive 0. The machine will boot up correctly, thinking it has a hard disk. With the power still on (and here lies the risk) plug the disk motor power cable back in. ENSURE THAT NO DISK ACTIVITY IS CALLED FOR UNTIL THE MACHINE IS UP TO SPEED.

You can then either repair or format the hard disk as normal and you have saved a heap of time and money.

I must say I wouldn't recommend this procedure until the guarantee has long gone and no other solution presents itself. Nevertheless, there's a fiver on its way to you, Richard.

10 MARKET PLACE
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cannot be referred as DF2:. Instead, it'll be a dedicated drive for PC use.

Assuming you wish to connect the 5.25" drive to the standard Amiga port, in most cases nothing need be added to the Workbench apart from a small addition to the startup-sequence found in the S: directory. You are right to assume that drive DF2: is reserved for use as a 5.25" drive, but not exclusively.

A 3.5" drive connected to DF2: will perform as happily as it would under DF0:, DF1: and so on. All is revealed in the Mountlist – a text file – found in the DEVS: drawer and used to instruct the computer to Mount its devices. Check the Mountlist by clicking on the Shell icon and typing the following:

```
Type DEVS:MountList
```

If all is well, the response should include the following, plus a whole lot of other entries. Use the space bar to stop and read the file and the delete key to continue.

```
/* Mount a 5.25" disk drive
to be mounted as DF2: */

DF2:
Device = trackdisk.device
        Unit     = 2
        Flags    = 1
        Surfaces= 2
        BlocksPerTrack = 11
        Reserved = 2
        Interleave = 0
        LowCyl = 0; HighCyl = 39
        Buffers = 20
        BufMemType = 3
#
```

If this entry is not on your Mountlist then add it using a suitable text editor (assuming you are using a copy of your Workbench disk).

Use the text editor to adjust the S:startup sequence so that the computer will recognise the existence of your 5.25" drive. To do this, just add the following line prior to the LOADWB command:

```
Mount DF2:
```

Now all you have to do is switch the computer off. Plug-in your 5.25" drive into the socket at the rear of the machine and switch back on. The new drive should be configured as drive DF2: and can be accessed in the same way as your standard 3.5" drive. Of course, there are differences between the two. For instance, a 5.25" drive cannot detect whether a disk has been removed or inserted, so take some time to read the section of the manual regarding the diskchange command. ***MD***

Q

Procedure revised

Could you tell me the equivalent code in *Amiga Basic* for the PROCEDURE statement? Also, how do you open a file for inputting data and then reading from it?

LH Ahmed
Perivale

A

The way this is done in *Amiga Basic* is via the SUB statement. This must be followed by the name of the procedure, then a list of the expected parameters enclosed in brackets and separated by commas. After this must come the keyword 'STATIC'. Parameters are passed by value, which is to say that any changes made to the variables within the subroutine will not affect the corresponding variables outside of the subroutine.

Any external variables that you wish to use within the subroutine must be declared with the SHARED statement. Finally, the whole thing is rounded off with 'END SUB'. The subroutine is executed by the 'CALL' keyword, followed by the subroutine's name. For example:

```
number=3
amax=100
DIM A(amax)
CALL equal2 (number,amax)
SUB equal2 (value,last)
STATIC
SHARED A()
FOR i=1 TO last
IF a(i)=value THEN PRINT i
NEXT i
END SUB
```

Simple file access in *Amiga Basic* is done using the OPEN, INPUT, PRINT and CLOSE statements. A sequential file can be opened for either input or output, according to the syntax:

```
OPEN "path/filename" FOR
INPUT AS #1
```

Replace INPUT with OUTPUT if required. The number can be any value between 1 and 255 and must be used throughout when referring to the same file.

INPUT and PRINT statements are then used to read information from or send information to the file, followed by the file number. For example:

```
PRINT#1, "This is the first
part of my file"
```

Once you have finished all operations on the file, you should use the CLOSE statement followed by the file number. Try consulting chapter five of the *Amiga Basic* manual if you need more information. ***CR***

Q

What's the difference

Which is the better computer to buy for performance and value for money, the A500 or the A1500 packages? How compatible is the A1500 with A500 software, games word processors etc?

Which monitor do I go for, the Commodore 1084 or the Philips CM8833 Mk II?

M Williams
Deal
Kent

A

The best computer is the one that fits your long-term requirements to the full. In terms of performance, there is nothing between an Amiga A500 or the A1500. This is because they are essentially the same thing. Amiga software will run happily on either machine, except old programs that do not take account of fast memory. Such programs are few and far between and, provided they are written on a DOS format disk, can be rectified via a workbench utility "NoFastMem".

The important difference between the two is one of expandability. This has become less of a problem recently because of the innovative devices that can be attached to the A500. The A1500 has the facility to house hard cards (devices to control hard disks), accelerator cards, Bridgeboard compatibility, enhanced graphics and so on. The A500 does not have this facility, but then who could have imagined that a PC Emulator could be fitted inside the expansion trapdoor? Expansion for computers not designed for expansion does not seem to be a problem these days.

Price is another factor to consider. If the envisaged use of the computer does not include the need for expansion, then there seems little point in paying the extra dosh for the upgraded A1500, even though its price is extremely competitive.

Again, I can see little difference between the CM8833 Mk II and the Commodore 1084 monitors. Both offer high-resolution RGB and composite output. Sometimes retailers will offer a deal with one of the selected monitors, and that should help you decide. ***MD***

Q

Unsure of Shell

On the limited occasions that my children have allowed me access to my Amiga 500, I have attempted and failed to understand the CLI and Shell.

My problem has become more acute since purchasing a PD disk called '*Kingdom At War* 1.0'. Reading the instructions on this disk, I am informed that, "Before running this program you will need to: COPY FORlibs/future.library TO libs: (on your Workbench 1.2 disk)."

Entering this command in both the CLI and Shell gives the reply 'Can't open FORlibs/future for input, object not found'.

After having tried various permutations I have now given up and await with hope your response. What am I doing wrong?

Mike Hegarty
Windsor
Berks

A

It seems to me that the most likely explanation is a misprint in the instructions. Instead of the word 'FOR' before the string 'libs/future.library', you should have the word FROM, followed by a space. It is a command to copy the file future.libs FROM the libs directory of the PD disk TO the libs: directory of your Workbench disk.

If you only have one disk drive, this can be a little awkward. What I suggest is making the COPY command resident before attempting to use it. To make a command resident means to place it in the Amiga's memory so that the Workbench disk does not have to be accessed every time the command is used. To do this type:

```
RESIDENT C:COPY ADD
```

Also, instead of copying directly from one disk to the other, it is easier to

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I SEE NO TIPS

Don't need our help? Reckon you can do a better job of giving advice and tips on a subject? Well, do it! As well as asking for advice, we want you to give it too. If you have discovered a useful tip or two for any program, hardware, language etc, then send it to us and if it's any good we will use it on the Amiga Answers page and bung you £5 in return. If you think we have got an answer wrong, or have failed to give the full picture, then give us what you think is the right answer – we might even cough up some cash for that too. So don't just sit there, get tipping and help out your fellow Amiga owners. Send your cunning solutions to: Amiga Tips, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW.

Ten things ... you always wanted to know about the Amiga – and weren't afraid to ask.

Thing the first

What is a printer driver?

A printer driver is part of the background team which acts as a translator between the Amiga and the printer. The application that wants to send data to the printer hasn't the faintest idea which printer you have, so it sends standard ANSI escape codes to the Amiga's printer device (PRT:) instead. A list of these can be found in Appendix D of the A500 manual.

The printer driver is a program that multi-tasks quietly in the background waiting for something to speak to it, at which time it translates the ANSI escape codes into commands the printer can understand. If you don't know how to select a printer driver, check Chapter 6 of the Amiga manual.

Thing the second

How do I make and install a disk with only one drive?

First, enter the Shell or CLI and type:

```
Install?
```

When an AmigaDOS command is typed with a question mark, instead of a list of arguments, a 'command template' is printed – AmigaDOS's way of explaining what arguments it expects. Once the command template appears, the command has been loaded in from the Workbench disk, so take it out and put in the disk you want the command to operate on.

Once you have put in the disk you want to install, type 'df0:' and press RETURN.

Thing the third

How do I change my keyboard from USA to GB?

Open the System drawer on your Workbench disk and click once on the SetMap icon. Clicking once selects an icon without actually opening it up for use. Having done this, move to the top of the Workbench screen with the right mouse button pressed until the Workbench menu appears. From this select the Info option.

A window containing several boxes will be displayed. Click inside the box marked 'TOOL TYPES' and type in the following:

```
KEYMAP=gb
```

Put the word 'KEYMAP' in capitals. Then press RETURN and click on the SAVE gadget. Double clicking on the SetMap icon configures your keyboard as GB. Other options include: d for German, e for Spanish, f for French, i for Italian, is for Icelandic, s for Swedish, usa for standard USA, usa0 for 1.1 Amiga compatibility and usa2 for Dvorak keyboards.

The fourth thing

What are AmigaDOS pipes and how do I go about using them?

Pipes are an idea taken from Unix. They are used for feeding data from one application to another. Unfortunately, they are rather limited: only two applications can be joined by a pipe in AmigaDOS, and this can be in only one direction. There are no Ts or branches.

Supposing you wanted to do a recursive directory list. On a typical disk, there is far too much information to display on a single screen, so the ideal solution would be to display this information with the MORE program. A pipe is needed to connect the output of the DIR command to the input of MORE. This is done in the following way:

```
RUN MORE PIPE:A
DIR >PIPE:A ALL
```

The first line sets MORE running as a background task. It takes its input from the pipe labelled A, but cannot print anything until there is something in the pipe. So the second command, DIR, uses the '>' symbol to redirect its output into pipe A. Once this is done, MORE can busy itself with processing this information.

Thing number five

How do I get my graphics to print without leaving a white bar between each line?

Banding is a problem inherent to almost every printer this side of £2000 and is usually due to slight inaccuracies in the paper feed mechanism. The best solution is to select 'Single sheet' from Preferences and feed paper in manually.

Thing six

How do I save my Amiga Basic programs onto my disk instead of the Extras disk?

When saving your program, put the disk you want to save it to in the disk drive. Then select the SAVE option from Amiga Basic's menu. Type the name you want your program to be saved under, but prefix this with 'df0:'. This lets AmigaBasic know that you want your program saved to the disk currently in the drive, rather than the one that it assumes you want it saved to. The line you type should look something like:

```
df0:Myprogram
```

A seventh thing

What are viruses?

Viruses are capable of hiding themselves away in obscure places of your Amiga and copying themselves onto any disks you put in your drive. In this way they transmit themselves. Some will erase or corrupt files and crash the system.

Switch your Amiga off between inserting every new disk and a virus will not be able to replicate. Neither can one copy itself onto a disk that has its write protect tab open.

It is also possible to obtain virus hunter/killers from the Public Domain. These recognise most (but not all) viruses and will remove them. I strongly recommend getting hold of one.

Thing the eigth

Whenever I put one of my disks into the machine, I keep getting the message that it is a non DOS disk. What can I do?

Your disk is corrupted. A number of things, including wear and tear, can cause this. Because of the clever way in which data is stored on Amiga disks, it is possible to recover some of the information stored on a corrupted one. To do this, put the disk in your internal drive, go into the Shell or CLI and type:

```
DISKDOCTOR df0:
```

The program will attempt to salvage data on the disk. When it has finished you will be instructed to copy the remaining files onto a new disk.

And another thing

What is the difference between fast RAM and chip RAM?

The distinction occurs because of the Amiga's graphics and sound chips, particularly the Agnus chip. Unlike the Amiga's central processing unit (the bit that does all the computing), the Agnus chip can only access a limited amount of memory. The newer Amiga's Agnus chip (known as a fatter Agnus) can access 1Mb, and that of the A3000 can access 2Mb.

It is impossible for the central processor and the Agnus chip both to access the central processor at the same time. The Agnus chip has priority, so while graphics or sound operations are in progress, the central processor will be slowed down. This is the way that chip memory works. Fast memory refers to the area of memory that the Agnus chip cannot access, so called because the processor can access it without hindrance.

The tenth and final thing

How do I make a copy of a disk?

Copying disks is done from the Workbench. Once your machine has booted up and the disk drive light has gone out, take out your Workbench disk and replace it with the disk you want to copy. Move the pointer onto the icon (or picture) of the disk on the screen. By clicking once on the left mouse button, the disk icon becomes highlighted.

Now move the pointer up to the white bar at the top of the screen, holding down the right mouse button. As you move to the left, you'll see three different menus appear. On the left-most menu – Workbench – you will see an option labelled 'Duplicate'. With the right button still depressed, move the pointer down this menu until the word 'Duplicate' is highlighted. Then release the mouse button.

You will be asked to replace the Workbench disk in the drive. Do so. After this, you will be asked to put the disk you want to copy back into the drive. A box will appear instructing you to put the SOURCE disk into the drive. This is the disk you want to copy, and should already be in place. Move the pointer into the box labelled 'Continue' and click on the left mouse button. After a time you will be asked to put the DESTINATION disk into the drive. This is the disk you want to copy on to. Again, click on the 'Continue' box. This procedure will be repeated a number of times before the copying procedure is finished.

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make an intermediary copy on the RAM: disk. First put the PD disk in your drive, then type:

```
COPY FROM libs/future.library
TO RAM:
```

Then put your Workbench disk in the drive and type:

```
COPY FROM RAM:future.library
TO libs:
```

And that, as they say, is that. ***CR***

Q

Copy right

It would be helpful if you could advise me what hardware or software is needed to copy my own pictures or designs to disk so that they could be modified using *Deluxe Paint III*.

A camcorder and VCR can be borrowed if they could be used instead of a digitiser and I would prefer colour images to black-and-white anyway. I suppose it should be possible to adjust the image size in the camera which is also useful.

The camcorder and VCR both have RF outputs and video and audio connections; would they do the job? Is a genlock needed for this? Are there any helpful books on the subject? Being retired, I am on a tight budget and if I can use what's available to keep costs down, so much the better.

Benny
Manchester

A

I'm sorry to say this, but you *are* going to need some kind of digitiser to capture the pictures from video to computer, as a video signal cannot be read directly by a computer. And you ought also to be aware that *Deluxe Paint* does not currently handle HAM (4096) colours, so the best that you'll be able to get is 64 colours (in lo-res 320 x 256 or 320 x 512 interlace), but this depends on your Amiga set-up and the amount of memory it has.

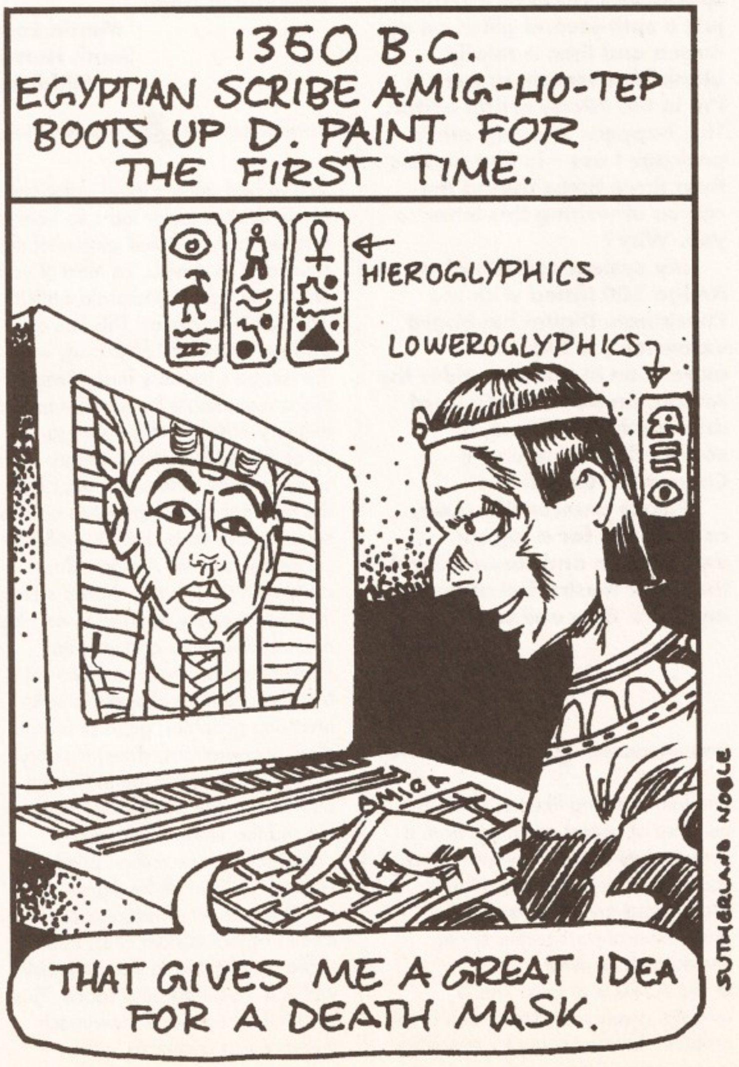
If you want to use a video camera or VCR, you should use one with composite video output, rather than RF, as this will improve picture quality. There are also S-VHS digitisers becoming available, which will give even better quality. As with most things, the better the equipment (and usually, the higher the price) the better the final quality will be.

As you're on a tight budget, I would recommend that you consider either NewTek's Digiview Gold or Rombo's Vidi-Amiga, either of which can be had for around £100. As a long time user of Digiview, I have grown to like it and it serves most of my needs. But if you want to capture from either VCR or camera, then you'll probably do better with the Rombo kit. Both these units will work in colour, but you'll also need to buy a colour splitter of some kind (as digitisers require separate red, green and blue components to be made from the video signal before grabbing). Rombo also make one of these, priced around £60. In fact, you may as well just consider the new Rombo package – The Complete Colour Solution – which includes digitiser, splitter and software. RRP £179. Note that if you use a VCR with Digiview , it should have a rock-steady pause facility.

You'll be glad to hear that you don't need a genlock for digitising – genlocks are used to mix Amiga signals with external video, for such purposes as titling and so on. Though you may be interested to know that there are more and more genlocks that are starting to include various digitising features.

There are several other aspects to digitising, such as lighting, sturdy tripods or copy stands, lens types and chips v tubes, if you plan on using a video camera that is. There are several books available on the subject (try DTBS of Rochdale, tel 0706 524304), and you could try having a good read of Phil South's *Good Digitising Guide* in issue two of *Amiga Shopper*.

My advice would be to experiment until you get the results you require, and try to find local Amiga users who may be able to help you further. ***GW***



Q

Plug problem

Having just acquired DigiView Gold in a computer shop bankrupt sale for £25, I took it home and tried to connect my video to my Amiga. Unfortunately my video doesn't have the video out socket, just aerial and SCART.

Not being an electronics expert, can I buy a SCART to DigiView cable, or can you suggest the pins I need to have connected for it to work. My video is an Akai twin-speed four-head machine, with crisp pause (no lines).

Richard Bright
Winchester
Hants

A

Good and bad news there, eh? Glad to hear that you've got solid pause on your VCR – you'll need it with DigiView. I've done some digitising work with this deck and it works fine. As for the SCART to DigiView connector, try somewhere like Tandy where you can often find converter kits such as you need. You'll require a phono (also known as RCA connector) output for the video signal to the DigiView. If a kit is not obtainable, a cable should be quite simple to make up as long as you know where the video signal is on the SCART (try the user manual for the pin diagram) and connect the video signal from the SCART to the centre pin of the phono and the ground (or earth) from the SCART to the case tag of the phono. That should solve your problem. ***GW***

Q

Spring clean

Please help. Recently I decided to customise my Workbench 1.3 disk, removing unused programs and replacing them with useful ones.

I discarded clock, calculator, clockptr and nofastmem which I replaced with Intswitch. I then proceeded to crunch the vast majority of files remaining on the disk with PD *Program Cruncher* v1.0 and also programs that I had moved to the Workbench disk, such as *Disksalv*, *Virus* 4.0, *Zoom*, etc, some of which run from an auto drawer on boot.

I then upgraded the whole Workbench disk to version 1.3.2, which is a Commodore batch file that fixes bugs in Workbench 1.3.

My problem is that when I boot this newly customised Workbench disk, everything loads as normal, but when the CLI window appears before Workbench, a message appears: "Pure Bit Not Set".

Please can you tell me what this means and how to go about rectifying this. I use a 1Mb A500 with Kickstart 1.2 and Workbench 1.2.3.

S Hindle
Paignton
South Devon

A

This problem is simple to explain and easy to rectify. The message "Pure bit not set" is coming from the RESIDENT command in the Startup-sequence. RESIDENT is called five times during

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the startup and is used to make certain commands resident in memory and speed the boot process up slightly.

In order for any command to be resident it must be pure – that is, it must be both re-entrant and re-executable. This is a complex subject explained in more depth in *Mastering AmigaDOS* 2, volume two *(you're an absolutely shameless plugger Mark – ed)*.

For the sake of this discussion, suffice to say you must NOT pack any commands that are made resident. For a standard Commodore Workbench this affects: Shell-seg; EXECUTE; MOUNT; MAKEDIR; and ASSIGN. If these commands are force-loaded regardless (as they are in a standard Workbench) they may crash the machine when called.

One solution is to copy the original commands back on to the disk replacing the packed versions. Alternatively, you may find ARP1.3 (AmigaDOS Replacement Project) is a better solution. The ARP commands are smaller than the AmigaDOS versions, have more features – and (probably) fewer bugs. ***MS***

Q

Small consolation

I have searched in vain for an AmigaDOS equivalent to the MS DOS command Ctrl-P or the RISC OS Ctrl-B. Both of these commands echo what is printed on the screen to the printer until they are cancelled by typing Ctrl-N and Ctrl-C respectively. Can you provide an answer?

Philip Burman
Ulceby
South Humberside

A

Simultaneous echo to printer is not usually possible under AmigaDOS because of the way the consoles are handled: AmigaDOS is multi-tasking, not multi-processing. In effect two Shells could attempt to send output to the printer at once – this is not possible. However, a small utility called *HardCopy* will do this for you and handle the multi-tasking problems too. You should be able to get a copy of *HardCopy* from any good PD library. ***MS***

Q

Mains reggae-lation

After many years of annoying my friend all hours of the day in order to use his A500 and subsequent B2000, I have decided to make headline news and buy my own B2000.

The question is: in approximately 12 months time I will be leaving the UK for a better life in the Caribbean and, while the mains supply is 220-240 volts there which is OK, I'll be within stone's throw of the USA and all the mail-order goodies on offer. Will any of the peripherals I buy there cause any problems with the 220-240v machine?

J Malcolm
Southfields
London

A

Many peripherals (and internal cards for the 1500/2000 series) use the Amiga's own power supply, so provided the input voltage is within its range (230 to 250V) there should be no problem. We would like to make sure, so perhaps you'd be kind enough to send us all some tickets for that destination (purely for the research you understand). ***MS***



Guppy's RAM bites back

Q

Crashing bore

Over the course of the last few days my Amiga has seen fit to persistently hang whenever it feels like it. There's no spectacular crash or anything, just a split-second glitch on my screen and then a totally blank blue screen, or grey if I'm in the *PPage* article editor. This happens in every other package I use – in fact no less than three times during the course of writing this letter to you. Why?

My system consists of an Amiga 500 (fitted with the Checkmate Digital keyboard extension), a 5Mb RAM expansion in the slot under the Amiga, an A590 20Mb hard drive with 2Mb fitted, a second disk drive and a Cannon BJ10e printer.

Please answer this query as I am lost for a logical explanation and cannot stand the sheer frustration of losing my work time and again.

Guppy
Shepherds Bush
London

A

Random crashing like this could be because of almost anything, from a virus to dirty mains. However, since your system comprises of a large RAM board and an external disk drive, several possibilities spring immediately to mind.

- The A590 is at fault. This is unlikely, given your description of the problem, but you could try removing it and seeing if the problem persists.
- The fault is on the RAM board itself. Either it's loose or just about to fail. If you fitted it yourself, make sure it is mounted firmly and all the internal connections are sound.
- The PSU is about ready to give up the ghost. Some Amiga 500s come with a high-current power pack; others don't. If your machine has the small version, then the extra bits might be overloading the supply. ***MS***

Q

Agnus anguish

I do a lot of animation on my Amiga with *Deluxe Paint* III, but find that, even with a 1Mb system, memory availability places severe restrictions on the scope of my creations.

I've heard that the new, fatter Agnus chip is supposed to improve the amount of memory for things like animation. My Amiga is three months old, so is it likely to have the new chip fitted and, if so, how can I find out for sure? If it hasn't got the new chip, does Commodore offer an upgrade and what is the likely cost of purchase/fitting (indeed, would installation be possible at home?).

Martin Eager
South Harrow
Middlesex

A

We've had quite a lot of questions about this particular topic so here is a reasonably detailed picture of the situation:The Amiga, as most of you will know, uses a Motorola 68000 16/32-bit processor. This has an address space of 16Mb and, with the Amiga's memory map, 8Mbs of this are available for random access memory (RAM). On the Amiga, not all of this addressable memory is the same and the difference stems from the fact that part of the RAM address space is shared by both the 68000 processor and the Amiga's three custom chips. It is this shared memory that is commonly referred to as 'chip' memory.The three custom chips (called Agnus, Paula and Denise) handle a number of specific tasks involving graphics, general screen display operations, direct memory access (DMA) etc. (The blitter – a device that can move pixel data around the screen at speeds approaching one million pixels per second – is part of the Agnus chip).

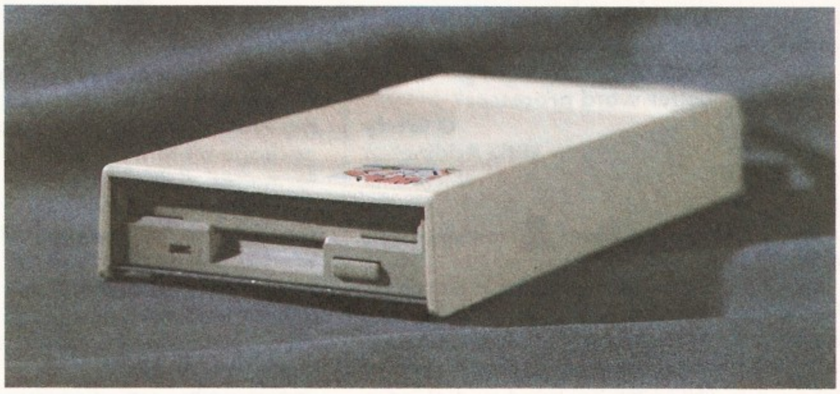
The amount of address space that these original custom chips could share was limited to that definable within a 16-bit address space. This meant that, no matter how much memory was available in the

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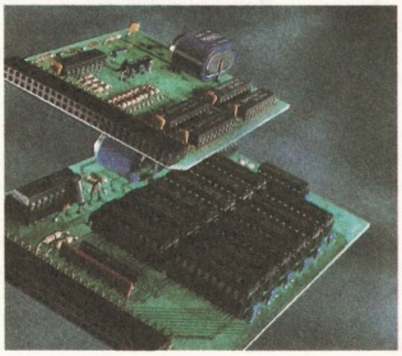
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machine, the custom chips could only access the lower 512K. In the early Amiga days this wasn't too much of a limitation, but as Amiga programs (especially graphics and animation programs) have grown in size and power the 512K limitation has become noticeably restrictive. To put these numbers into perspective, a single five-bitplane high-resolution PAL screen will soak up 100K of chip memory, and a corresponding interlaced display takes 200K; ie, almost 40 per cent of all the chip memory available on a 512K machine. When you realise that DMA sound samples, graphic objects and various other items often need to be stored in custom chip accessible memory then 512K begins to look almost miserly.

Several years ago Commodore began working on an enhanced chip set (ECS) and this included a replacement for Agnus called 'Fat Agnus'. This new version, so called because of its physical shape, effectively does the same job as the original chip but reduces the support component chip count – all clock generation for the Amiga system, for instance, is now incorporated into Fat Agnus as are the control signals for handling chip RAM access.

The big difference as far as chip memory goes though is that FAT Agnus now has address lines which can access twice as much memory. Hence a machine fitted with Fat Agnus has 1Mb of shared address space and so can have 1Mb of chip memory fitted. Obviously this is a big advantage for graphics-intensive operations like animation – providing of course that the programs that are running actually try to make use of the extra chip memory.

There's a good chance that your machine, since you only bought it a few months ago, is already fitted with Fat Agnus. Had your machine been older and out of warranty, the easiest way to have found out would have been to take the cover off and have a look – the original Agnus chip has a part number of 8361, Fat Agnus on the other hand has a 8370 part number. Unfortunately doing this will invalidate your warranty, so perhaps the best idea is to ask the dealer you purchased the machine from to check the serial number with Commodore technical support. In theory, they should be able to give your dealer the necessary information over the phone. Alternatively, your dealer's repair/service department may be able to tell you. Another possibility is to use a software-based check – there is supposed to be a public domain program on one of the Fish disks which can detect the presence of the Fat Agnus chip but I must admit I've not seen it.

It's not a particularly difficult job to swap over a few chips, but nevertheless the only official way to get your machine fattened up is through the Commodore's official service engineers FMG (whom you can contact on 0733-391234). They'll provide, and install, a Fat Agnus chip for £20.

There's no point (assuming your machine hasn't already got one fitted) in paying for a Fat Agnus unless however you have at least 1 megabyte of memory – FMG will do the complete Fat Agnus/1Mb memory/KickStart 1.3 upgrade for £103 (inclusive of VAT). The turnaround time, so FMG assures me, is about twelve days.

If you are after maximum speed I think the best idea might be to upgrade to more than 1Mb. The reason being that the Amiga's bus contention scheme is such that the main 68000 processor can sometimes get locked out of the chip memory address space because of something known as cycle-stealing. One graphics-intensive situation in which this can occur is during the DMA-oriented high-speed blitter operations. A program, if it is actually running in chip memory, could therefore be slowed down during these times. Some clever hardware tricks, however, allow the 68000 processor, even while locked out of chip memory space, to still access RAM memory outside of this region. This non-chip memory region, called fast memory for fairly obvious reasons, is therefore an ideal place for having your runable programs.

For maximum speed then you would ideally want to have a reasonable amount of fast memory also available – programs running in fast memory would then not be slowed down by any custom chip cycle-stealing operations. 1Mb of chip memory and at least 1Mb of fast memory would seem to be a good combination to start with. ***PAO***

Q

Printer perturbations

I have an Amiga 500 with a 0.5Mb upgrade, an additional 3.5" disk drive and a Canon BJ 10e printer. I am having trouble printing graphics created on *DPaint* II. In fact, unless I boot the Amiga up with the Workbench disk or *KindWords* 2 and have either of these disks in one of the drives when I want to print, the machine crashes. I have studied the book that accompanies the disk but there is no suggestion that the program won't print without help. Also, when I try to load a *KindWords* file onto a *DPaint* screen, the Guru shouts at me. I can load a *DPaint* file into *KindWords* though, and I can load clip art into both *KindWords* and *DPaint*. I thought that as all these programs use IFF files, a file created on one was okay for the others. When I load a picture into *KindWords* it takes the whole width of the paper, which is why I wanted to load a letter into *DPaint*. That way I could put a picture into a space specially left for it. Can you suggest a way of doing this? Or do I have to get a better word processor?

G Brady
Little Addington
Northants

A

Printing from the Amiga is probably the most confused and confusing subject ever to grace technical help pages. Every Amiga program (with a few exceptions) uses a set of software drivers – interpreters if you like – to connect it to the printer. These are defined at boot time as follows:

- DEVS:System-configuration - the printer setup and driver name
- DEVS:Printers/XXXX - the driver (interpreter) defined in prefs (system-configuration)
- DEVS:Printer.device - the printer driving software
- DEVS:Parallel.device - used by most (Centronics) printers
- DEVS:Serial.device - used by a few (serial) printers

These are normally taken from the boot disk – in your case either the Workbench, *KindWords* or *DPaint* disk – when you switch on. When you boot from a different disk, one or more of these files may be missing or incorrectly set. If this is the case the printer will not work as it is supposed to, or even at all. The only solution is to boot from the appropriate disk before you start work. This problem can be overcome from the CLI, but this is best left to experts.

As to the other problem, I think you may have answered your 'file compatibility' question without realising it, although this is inevitably a confusing subject.

The IFF – Interchange File Format – was laid down by Electronic Arts in association with Commodore and was intended to allow different programs to swap data easily. However, until recently, the standard has not been adopted by word processors. Even now, so far as I know, only *Pen Pal* supports it.

The problem is, IFF supports many different standards: graphics, sound, music, formatted text and so on. Art programs such as *DPaint* only produce and understand IFF graphics files – other files should be ignored. Word processors should support IFF formatted text – *KindWords* does not. Therefore your *KindWords* text will not load into *DPaint*. To get the sort of output I suspect you are after, you should invest in a more up-to-date and powerful word processor such as *Pen Pal*. This has all the features you require in addition to being able to wrap text around pictures like a true DTP system. ***MS***

Q

Save me!

My first problem is in relation to saving from the Notepad or the *ProWrite* word processing package on to a blank formatted disk.

The system continually requests the volume copy of Workbench or the program copy of *ProWrite*. It will not allow me to save to a blank disk. I am using the requester menu in both cases. (Incidentally I am using two disk drives.)

The second problem is with deleting information from *Personal Finance Manager*. I have saved information under David.MNY. I have tried deleting this file through the CLI window using Workbench, but the system replies with 'object not found', although I can list the information via the CLI window and it clearly displays this file under Info.

The final problem is with transferring the three extra fonts from the Extras disk to the Workbench disk following the instructions given in the *Enhancer* manual. When transferring these fonts the system shows the fonts being copied to the Workbench disk. When completed I cannot access these extra fonts via the draw down requester menu. Why?

David Parfect
Kirkintilloch
Nr. Glasgow

A

Your first two problems appear related, although I am guessing from your explanation of the problem. I suspect you are getting confused by volumes and disk drives. This problem tends to be a little software-specific, but let's take an example using the Notepad. You boot with the Workbench disk, start Notepad, select save and insert your blank disk. You type in a name, select save and Notepad promptly asks for the Workbench disk back. But why?

This is caused by AmigaDOS

(part of Workbench) assuming you want to save something to the current disk. AmigaDOS assumes that the current disk is the one the application was started from. In this case it's Workbench, because that is where Notepad lives.

You have two choices. Either you supply the prefix of the disk drive containing the blank disk or the name of the disk you want to save onto. It works like this: on an A500 the external drive (and any disk currently in it) can be referred to as DF1:. Therefore, if you have a blank disk in DF1: and you want to save a file called MyFile to it you would enter:

```
DF1:MyFile
```

Alternatively, if you had a disk called MyDisk (use RENAME from Workbench) you could enter:

```
MyDisk:MyFile
```

Note that in both instances, the name of the disk or disk drive is suffixed with a colon (:). The second case, although more long-winded, always ensures you write the file to the correct disk. If that disk is not in a drive, Workbench will ask you to insert it before proceeding.

Much the same applies to the CLI. To delete the examples above you could enter:

```
DELETE DF1:MyFile
```

or

```
DELETE MyDisk:MyFile
```

The problem with the fonts is more difficult; certainly, the instructions in the *Enhancer* manual are correct. If you are copying the fonts correctly, you should be able to see them by entering the following from the CLI:

```
DIR FONTS: ALL
```

If they appear to be all present and correct, make sure you have run the FixFonts program in the System drawer. This makes sure the fonts are attached to the system and correctly updated. ***MS***

Q

DRAM, no RAM!

I recently opened up my Amiga 500, after the warranty ran out, to give the plastic shell a good clean. I removed the metal shielding (being nosy) and had a look inside.

On the board was some white lettering saying '512k/1M RAM'. There were four RAM chips already in place and also four gaps between these chips. The board had white lines drawn on it that would indicate that there was room to add four more RAM chips.

I have bought the KCS PC Power Board and therefore no longer need the 512k RAM expansion I had in the trapdoor slot. Is it possible to add these DRAMs to the board of my A500 and expand it to 1Mb of chip RAM? The board also has gaps for four resistors. Could you please tell me exactly what they are and where I could get them from?

I have a revision 6A Amiga with the new 'Fat Agnus'. The DRAMs on my expansion board are: Texas Instruments. Code: TMS44C256-12N.

Robert Downs
Blackpool
Lancs

A

The slots present on the Rev 6A 'Rock Lobster' PC are for a 1Mb expansion as you have correctly assumed, but there is a catch. They occupy exactly the same address space as the existing A501 expansion port. In other words, any upgrade would be redundant. This board was, I suspect, designed for the 1Mb Amiga 500, the A500P and has worked its way into the lowly A500. ***MS***

Q

Dali-ing clock

Since fitting the A501 0.5Mb expansion, the clock has been erratic, seldom keeping time for more than a few days.

I recently upgraded with an Expansion Systems 4Mb BASEboard and the clock on that is even more haywire. I am using Workbench 1.3 and have fitted a 1.3 Kickstart ROM but there is no improvement. The computer works fine otherwise.

I wrote to Expansion Systems in the USA and they sent me a leaflet saying that this problem is usually because of contaminated pins on the Gary and clock chips and other contacts and advising on how to clean them. This I have done but without improvement. I doubt that was the cause with the original A501 clock, since it is now working without problems in another Amiga.

Have you met this problem and could you please suggest another remedy?

Vic Trinder
Weymouth
Dorset

A

A quick straw poll around the *Amiga Shopper* office came up with the same answer: technobabble. Dirty pins on Gary, my foot! This is more likely to be a simple case of a flat battery. Since the battery backed-up clock is supplied with a Nickel-Cadmium rechargeable, simply leave the machine switched on for 24 hours to give it time to charge up. After that, the clock should keep reasonable time in normal use. It will run down in two to three weeks if the machine is not switched on. ***MS***

Cliff's Code Conundrum

Okay truth-seekers, we've done our level best to answer your questions. Now it's your turn. This month sees the start of Cliff's Code Conundrum, in which I will be presenting a series of tricksy little problems for you to sort out. There will be a prize of £50 each month for the best solution.

What do I mean by best solution? By best solution I mean the one that works (oh yes, I'm afraid so) and uses the most elegant approach. Elegant doesn't so much refer to pretty icons and so on, but to the beauty of your code. What? You don't find code beautiful? Then perhaps you shouldn't be reading this.

Anyway, for the more aesthetically-minded among you, this month's Code Conundrum Question Query thing is as follows:

Write a program that calculates and plots the gravitational motion of the Earth, Moon and Sun in two dimensions. Speed of execution, within reason, is not important. You will need Newton's Law of Gravity:

$$F = \frac{G \times M_1 \times M_2}{r^2}$$

```
Mass of Sun=6.1E24 kg
Mass of Earth=2.0E30 kg; at 1.5E11 m from Sun
Mass of Moon=7.5E22 kg; at 3.8E8 m from Earth.
```

I should warn you that only an approximate solution is possible – an analytic solution has yet to be found – so it's really an ideal computing problem.

Solutions should be sent on standard AmigaDOS disks (enclose a SAE if you want them back). They can be written in any language you fancy (programming language, that is), but if they are compiled or assembled, you must include the source code as well so we can print it. The winner's solution will be printed in two month's time and may the Guru be without you.

Q

Citizen can?

I've got a Citizen 3.5" drive which I would like to connect to the Amiga. It's a relatively new drive and uses a 5v supply. I understand that some drives have different connections on the back. I've tried this drive on a horrible Amstrad PPC without any modifications and it works.

I have also tried a Sony drive that did not work. Are the connections on the back different? If so what are they?

Karl McAuley
Sheffield

A

I assume you want to connect an external drive to your machine. Although most mechanisms use a standard interface (Shugart) the problem lies at the Amiga end. The Amiga has a smart interface (that recognises when a disk has been inserted) which can control the motor on each drive. This is the root of the problem. Motor control is achieved with a simple circuit which adds a function to the interface and if enough readers write in and request one, I'll run a constructional article with more details. ***MS*** AS

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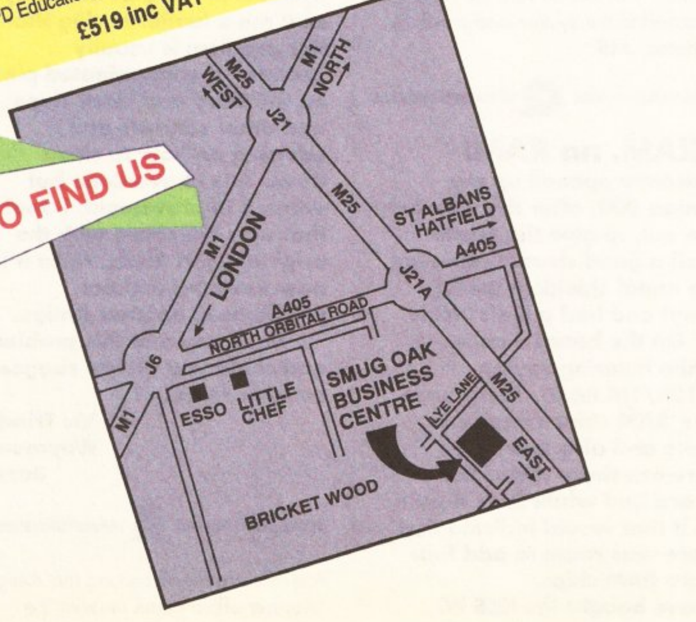
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Pedal to the metal



"Computing on the Amiga can be greatly speeded up by buying a good accelerator card. But, so you don't waste your dosh, I'm going to give you the fullest price-versus-performance spec."
Phil South

Accelerator cards for the Amiga are crashing in price and getting much faster. Phil South straps on his helmet and goes in search of the ultimate speed

BEGINNERS *START HERE*

An accelerator card or board (the difference is in how you fit it) is basically a device that increases the clock speed of your computer. That's a very basic way of looking at it. The clock speed of the Amiga is how fast the 68000 Central Processing Unit or CPU operates, and how many things per second it can do, such as add, subtract and move numbers around in memory. It only needs to be (approx) 7.14 KiloHertz 68000 in a normal, factory specification Amiga, as the custom chips take on most of the jobs that would be done by the CPU in a regular computer. The Amiga, as you are acutely aware, is no normal computer.

So the ways you can do this job all involve replacing the 68000 with something faster. On an A500 this means unplugging the 68000 and replacing it with either a faster chip or a floating circuit board. On the 2000 you can also do this, but certain boards and chips need to be put in one of the 2000's slots in order to draw the right amount of power from the system.

Fast types

So if you want to replace the normal 68000 with a faster one, here's how: if you have an A500 the only option is to pull the chip

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There are all manner of ways in which you can make it your Amiga into a better machine. Bigger memories are nice, and so are huge hard disks. But what about making it faster? Never crossed your mind? Well, we'll soon change that little problem. Just when you thought it was safe to go back to the computer shop or open a magazine, it seems that people are trying to sell you things that you don't need. Why on earth should you want to make your computer faster? Isn't it okay the way it is? Nope, of course it isn't. That's why accelerator cards are so immensely popular – we all have the need for speed.

Speeding up your Amiga isn't just a pose. In some applications it's a must and, if you think about it, when you add together all the time you waste waiting for Wait balloons to go away, it adds up to a lot of time. Halve the time you waste by using an accelerator and you're looking at greater productivity. It's not for nothing that Commodore endowed the top of the range Amiga with a 68030 chip running at 25MHz.

This sounds good doesn't it? But nowadays you can do a little better with a expander for your 500 or 2000. So sit back while we take a look at the best and worst that can happen to you if your decide to make your Amiga really go.

But first a word of caution. Although sticking a faster chip in your Amiga will improve the performance, you won't get full whack out of any of these cards without adding a 32-bit memory to them, and some of the cards underline this point by having the memory soldered to the card. Unless the whole machine is speeded up, you get a sort of bottleneck in memory as the processor runs too fast for the standard 16-bit memory chips. So be warned; if you want peak performance, don't just buy a processor card with no RAM. You could be wasting money.

The speed trials

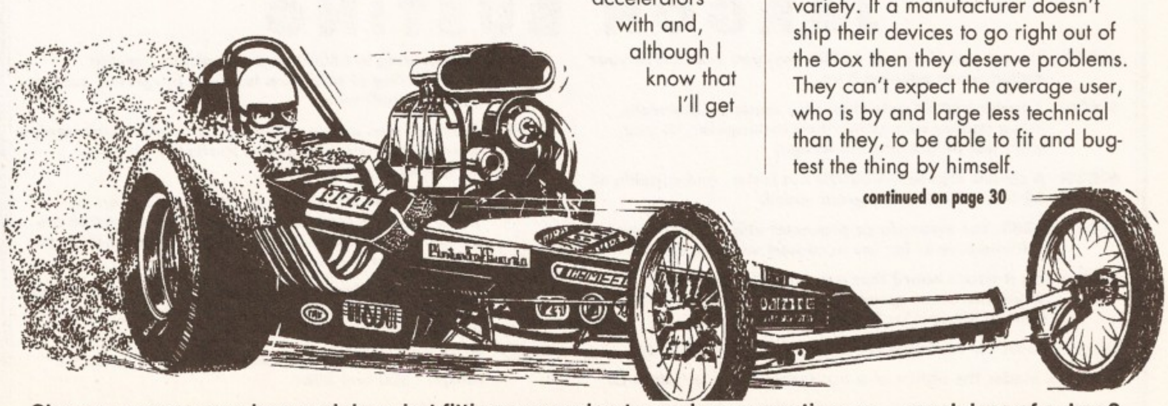
I decided to run a series of standard benchmarks on the cards, despite the contention held by most highly technical types that benchmarks don't mean a thing. Techies will always disagree on something and, to be honest, I don't think that whether they are valid tests of the speed of the things is important. The speed tests give you something to compare the accelerators with and, although I know that I'll get a torrent of complaints from the manufacturers that "the card works much faster if you set it up like so..." etc, I have to try to emulate what an average user would do if presented with the products – it's you I care about *(ooh, licky licky – ed)*.

This is a consumer test and consumers rarely have as much support from the makers of the boards as I do. All the boards have been treated equally, installed in the same machine according to the instructions given (if any) and run with the same disk of benchmarks. If the boards come out of the speed trials less well than the makers would like, then that's tough. The installation and setup was generally of the 'out of the box and into the machine' variety. If a manufacturer doesn't ship their devices to go right out of the box then they deserve problems. They can't expect the average user, who is by and large less technical than they, to be able to fit and bug-test the thing by himself.

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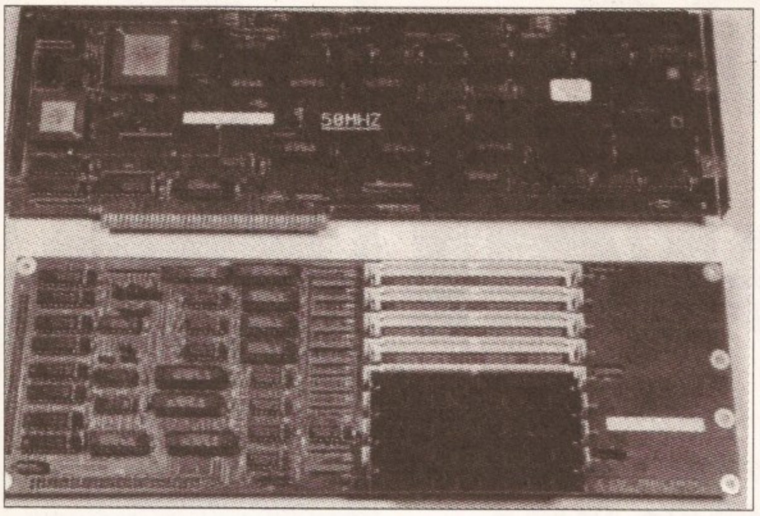
BLITS & BOBS

The word "accelerate" comes from the Latin word "accelerare" which means "to hasten" from the word "celer" meaning swift. Unfortunately it seems that in this case the Greeks didn't have a word for it.



Slow processors can be a real drag, but fitting an accelerator makes computing, er ... much less of a drag?

GVP 3001



Not up to much on aerodynamic styling, but the GVP certainly goes whoosh.

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The 3001 is an impressive board. To use a car analogy: if the standard Amiga is a Ford Escort then the GVP 3001 is a Corvette. The thing whooshes along in an almost intoxicating way, and everything about it smacks of class.

The construction of the board is very clean, with the memory board and the speed up/hard drive board being sandwiched together and linked by two long pin and socket connectors set at right angles. It's a bit harrowing putting them together, but the fit is good. The width of it, once assembled, means you have to part the two boards to get them into your Amiga, then put them back together once the edge connector is pushed home into the slot.

Interesting internals

The internals of the 2000 have obviously grown a few interesting new steel tabs since the device was designed. RAM is fitted as nice, cheap and fast SIMMs, which means upgrading to a larger memory is relatively inexpensive.

The manual and packaging are very nice, but then you'd expect that with a product worth over £2000 I guess. But the speed of the thing was actually noticeable, even to the naked eye and on the most mundane of system tasks. Screen updates were so fast, they seemed instantaneous. A ray trace, which took a couple of hours under normal 68000 power, took a little under 20 minutes using the GVP. If you want true workstation performance from your Amiga then this could well be the one to go for.

Rip-roaring relatives

The performance, relative to a 3000, is there for you to see in the speed trials, but bear in mind that the price for this level of performance is almost twice as expensive as a 3000. The card comes in three standard configurations: 28MHz, 33MHz and 50MHz – the one tested is the 50MHz version. Other configurations are dependent on which speed of co-processor you have with it.

On the compatibility question, I'd say the GVP comes off best as far as the old 'slap it in and see what happens' test goes, as this worked with any configuration of 2000 that I could engineer. Although you don't need to run the machine with a separate hard drive controller, as it has one on it (unlike any of the others), the GVP was the only board that worked first time with my Commodore 2090A HD controller. (There are technical reasons for this, and most of them are to do with the fact that I really should upgrade to a new controller as the 2090 is not the most state-of-the-art device available in these heady times.)

If you don't have a hard drive card then so much the better as the on-board hard drive controller is a high spec auto-booting job suitable for most good drives. Why not buy one with the unit and save a few bob?

CHECKOUT

GVP 3001

Speed 25/25
The fastest machine tested and, at the time of going to press, this is the fastest machine you can buy.

Construction 15/15
A well constructed two-board sandwich, which looks good and solid. And is solid, I hasten to add.

Software 7/10
The disk has a lot of programs on it, only one of which is really that useful on a day-to-day basis – and that's SetCPU.

Documentation 11/15
The booklet that comes with the machine is comprehensive but, as I said before, it suffers from too much technical detail and not enough practical stuff. A note on the switch for fall back mode would have been nice for example.

Installation 19/20
A breeze. Snap it in and go. All of a sudden you have a new computer. You can fit it in without separating the boards, but I wouldn't like to.

Compatibility 14/15
A few crashes originally, but I put this down to the board not being pushed home properly, or the software. Otherwise, the system worked well with everything, and just a few demos didn't go.

AMIGA SHOPPER 91/100

A very smart and impressive piece of kit, which is so simple to use that a child could probably install it – a child with £2000 loose pocket money to spare.

JARGON BUSTING

68000: The normal Motorola 68000 chip you will find in your Amiga when opening it up.

68020: A faster 68000-style chip, also made by Motorola. (It's a square chip rather than rectangular, so you can't just plug it into the Amiga)

68030: A similar chip to the 68020 but faster, and capable of 32-bit operation and great speed.

68881/68882. The Motorola co-processor chip's floating-point arithmetic units for use in concert with the 68000.

Accelerator: A circuit board that you add to a computer which increases speed by adding faster chips and faster RAM and/or ROM.

Co-pro: Short for Co-Processor chip. (See 68881/68882)

Fall Back Mode: The ability of a accelerator card to 'fall back' to operating in 68000 mode, enabling greater compatibility of software. Ie, some programs, such as games, won't work.

Jumper: A pair of pins on the circuit board to which you apply a small conducting peg. This shorts the pins and completes the connection.

Processor Slot: The special additional processor slot on the 2000 – the slot furthest to the right and closest to the power supply. This is where all the Zorro card-based processor cards go.

SIMMs: Single In-line Memory Modules – a neat arrangement of memory chips on a tiny circuit board for easy fitting.

Zorro: The format of the circuit board cards that go in the Amiga 1500 and 2000.

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out and put something else in its place. If you have a 2000 you can do that as well, but you also have the option of putting a card in the processor slot of the 2000. (This is is the last slot, located closest to the power supply.)

The first type of speed upgrade available is a go-faster chip – a plain 68000 with a faster clock speed. Two good examples are the Omega Projects 68000 board from Bytes'N'Pieces and the ICD ADSpeed. These chips improve speed by adding a new chip on a tiny circuit board, or rather, two chips: a normal 68000 and a higher speed one both sitting one above the other like bunk beds. The two chips are 'software switchable', which means you are supplied with a program to switch between them. The reason you would do this is to fall back to the standard 68000 occasionally to run programs that don't seem to be compatible with the faster chip.

The next option is a larger circuit board with pins to fit in the processor slot and one of the later and faster 68020 chips fitted. This is a near relative of the 68000, designed to run at much higher speeds. These 'daughter boards' are large enough to contain some extra memory, and 32-bit memory at that. As well as giving you more memory, the chips can take an image of your Read Only Memory – the bit where part of the operating system of the computer resides. This means that not only do you have a faster chip but you have faster system operations too.

Also, in this particular daughter board configuration, you can get a 68030 chip running in the machine. An A500 with a 68030? Yes it's now possible and, to add to the speed still further, there's the option of having the fast 32-bit RAM on board – up to 8Mb in some cases.

The other way you can get even more power into your

Amiga is via the Zorro slots. These are the internal slots on a 1500 or 2000, and the reason you'd have a faster processor in there rather than in the hole the 68000 used to be in, is because of power overheads.

Processors up to a certain speed consume a certain amount of power; that stands to reason. Up to about 33MHz, the newer chips will sit quite happily in the 68000 socket. But to run a 40MHz or even 50MHz card you need more power, so you have to move over to the Zorro slots which have a higher power overhead. They can take more of a beating because they are designed as expansion slots – the processor socket isn't.

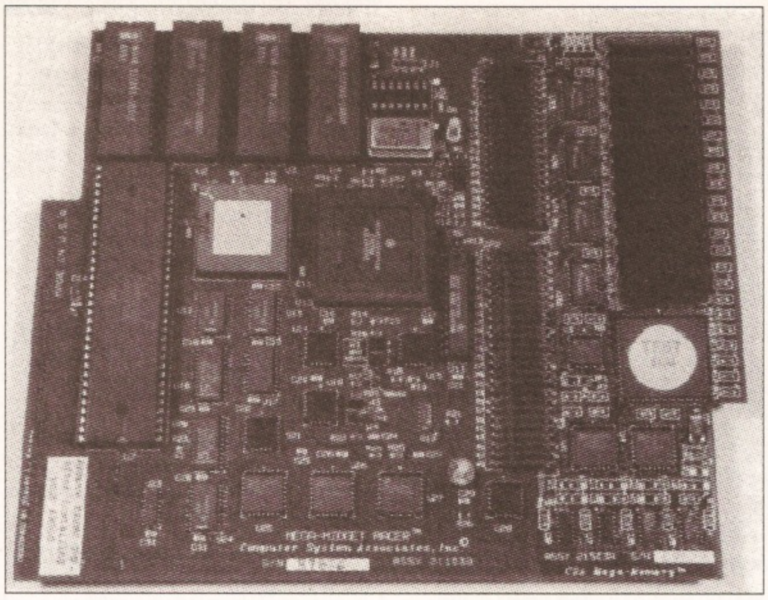
The speed of your machine after expansion depends on two things: what programs you are running and whether you have a co-processor, such as the 68881 or 68882 chips.

Co-processors are Floating Point Units or maths chips, and they take over any maths-oriented tasks that the CPU would normally have to handle. This speeds up operations by a further factor as the CPU is then free to concentrate on other things, making the machine run much more sweetly, especially on number crunching tasks like ray tracing and fractals.

Most problems on the Amiga are solved by extra memory, and make no mistake about it. If you have problem running a particular program on your Amiga, then the chances are that its root is insufficient chip or fast memory. Even on a machine with 1Mb of chip RAM, like all new Amigas, if you have no expansion (fast) memory then the custom chips steal all your memory and you're not left with much room at all for DTP programs and their copious amounts of data. Graphics take up a lot of room in the Amiga, so you need to add as much as you can afford to make them really sing along. Accelerators

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CSA Mega Midget Racer



It may be small but it's perfectly formed – the Mega Midget combines high speed and excellent value for money in an eensy weensy configuration.

The Mega Midget is a daughter board design and the most powerful of the choices in this configuration. The design features a separate RAM board that plugs onto the end of the unit, and a gap for your 68000 chip too. This enables the software-selectable fall back mode to access the old central processor to run software that can't handle the extra speed. The program reboots the computer and runs with the 68000 the second time around.

Scoring along

Mega Midget scored very favourably in the speed trials, considering its size and price. As the fastest clocked of the daughter boards at 33MHz, it was obvious that it would win the speed trial, but seeing this thing running in a 500 was very impressive.

Slotted dream

Fitting the unit was a dream and the board slotted into the socket without undue pressure, unlike some of the other daughter board models.

The manual is one of the better ones, with a comprehensive startup page which takes you through the basics very quickly, and is careful to point out the dangers of doing this kind of a modification. Static is a problem, as ever, and the manual is one of the few to tell you how to counter this problem.

Although I liked the MMR, I was a bit cross that it didn't work with the two hard disk controllers I tried. It did work with the Supra Hard Card however, and this is obviously the way to go. The card is also fussy about which HD card the A590 uses and doesn't work with certain older models of this popular peripheral, though newer revisions feature an upgraded board and so function perfectly.

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Checkout

CSA Mega Midget Racer

Speed 25/25
The best of the daughter boards, and at this price you really can't go wrong for price/performance.

Construction 14/15
Good solid construction with a neat, detachable RAM board, which means you can upgrade easily. The down side is that once you upgrade you have no use for the RAM board you replace.

Software 0/10
No software required. You just plug in and off you jolly well go!

Documentation 15/15
Good ring-bound manual with plenty of practical details. A lot like the GVP one in style, although not as slickly printed.

Installation 20/20
Fits easily into a 2000 or a 500, with no stray edges to catch those annoying little capacitors that stand up on the board.

Compatibility 10/15
I tried it with two hard drive controllers that it didn't like. The Commodore 2090 and the ICD ADSCSI. No dice with either, although it does work with some.

AMIGA SHOPPER 84/100

A good, reliable piece of kit with solid construction, easy fitting, high performance and good instructions.

The Turbo 68000 didn't work

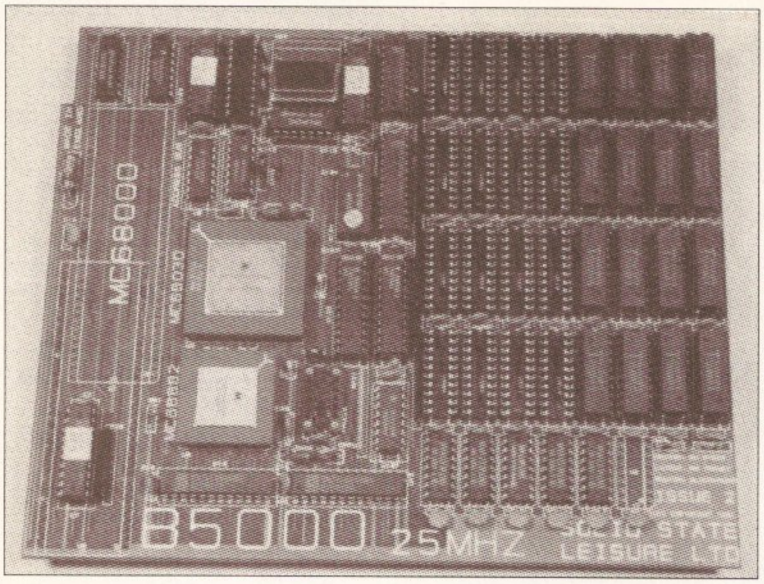
There's always one unit that fails to work in one of these comparative reviews, and Omega Projects' offering was the one. The unit worked perfectly when it left the retailer, but in all our machines it failed to run so we couldn't test its performance against the ADSpeed. It does, we understand, run at 1.75 times the speed of a normal Amiga.

The unit has a long circuit board, which makes fitting in a 2000 almost impossible and no matter how hard you press down on the thing, it pops up. But that's no problem on the 500.

The documentation is a sheet of paper, which basically tells you how to fit the thing with the minimum of technical detail. Software compatibility is made by a hardware switch which runs out to the back of your machine and a little solderless connector runs to the FB101 component on the motherboard. Full instructions are given for this in the supplied documentation.

The supplied unit didn't work, so it's hard to say how it rates against its nearest rival, the ADSpeed. It is somewhat cheaper though.
I would have like a bit more in the way of documentation, but I understand that such publications cost mucho moola and if you're selling a cheap competitor against a product from a large company, you have to keep costs down.

Solid State Leisure B5000



New looks, new features and a rather radical turn of speed make Solid State's B5000 a welcome step on from its predecessor, the 20 Card.

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The B5000 is the third 25MHz version of the old 20 Card. That's not to say it's just a rehash; it's a totally new design, but from the same stable. The design is of the daughter board type, and plugs into the socket without much trouble at all. The RAM is stuck into rows of sockets, which means that you can fill it up as much or as little as you can afford.

The board features a nice new surface mounted design, meaning the chips are flush with the board, almost, and brings the construction of the B5000 well in line with current trends in manufacture from bigger firms, both here and abroad. The unit is sturdily built and cleverly shaped to fit into either a 500 or a 2000 without any trouble. A lot of the time you find peripherals that plug into the processor socket will get caught up on the little capacitors on the board of a 2000 as the layout of a 500 is, by necessity, very different.

The version I was sent was hot off the press, and so didn't have a proper 68000 socket on the board. This isn't a standard thing, it's just for the review machine. And strangely, it didn't affect its functioning at all. The B5000 is a great little board, and I'm really looking forward to seeing the 40MHz Zorro slot version, which I understand is out soon.

Checkout

Solid State Leisure B5000

Speed 20/25
Good speed at 8.5 times the speed of a normal Amiga and, although it has a lower clock speed than the Mega Midget, it still turns in a good result.

Construction 15/15
Nice surface-mounted design and much improved over the old 20 Card design.

Software 6/10
Comes with a disk of very nicely presented software, mostly of the benchmark variety, but with the usual C directory command, SetCPU thrown in as well.

Documentation 5/15
Although the docs are adequate to get you going, a sheet of paper isn't that much of a comprehensive manual.

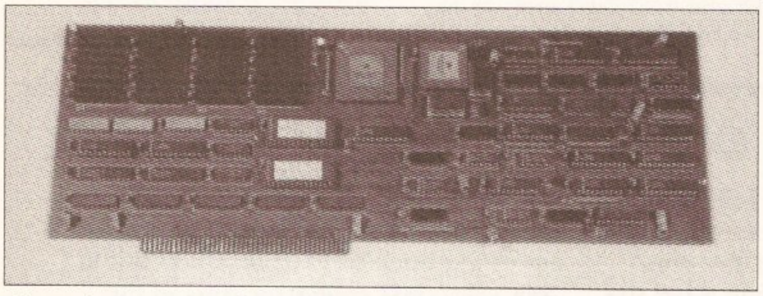
Installation 20/20
A nice fit in either machine, just like the Midget, and has been very carefully designed for a trouble-free fitting.

Compatibility 12/15
It didn't mind most of the peripherals I tested and had a high degree of tolerance for a bog standard 2000. On a 500 there were no problems at all.

AMIGA SHOPPER 78/100

Good performance, although a little lacking in docs. But overall a very high performance card for the price.

HARMS Pro 030



Cheap, but not nasty. Good docs and performance do the unit no harm.

Although slightly tacky to look at, I was heartily impressed by the HARMS Pro 30. Performance was very good and, considering the cost of it is much less than the similar GVP model, it is great value for money. When I say similar, I mean that it is similar to the 33MHz GVP at 28MHz, and not the 50MHz one we saw here.

Speed is good

The documentation I received was in German, although this won't be the case with the one sold in the UK. This made divining what was being said a little bit difficult, but from the little German I know, the manual was well produced, and has some nice half-tone pictures of the machine's insides for you to match up to yours. This makes installation a breeze, and even just looking at the pictures I was able to discern what should go where.

Like the GVP boards, the HARMS has a fall back mode activated by changing a jumper on the board, and this can be fitted with a little switch to run to the outside of your machine.

A first class product and a very cost-effective way to pump up the speed of your machine.

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Checkout

HARMS Pro 030

Speed 22/25
A fast 28MHz card with a slight edge on the daughter boards. The Zorro slot connection gives better power overheads.

Construction 10/15
A good, solid board.

Software 4/10
Some benchmarks SetCPU and precious little else, but you don't need anything to make this card go wheeeee.

Documentation 8/15
When the English translation comes through this will be a good manual.

Installation 20/20
Snap it in and off it goes. Installation of Zorro is safer than processor socket jobs.

Compatibility 10/15
It found some hard disk cards like the 2090 a bit distasteful, but then so do I.

AMIGA SHOPPER 66/100

A very good card, and a fair bet if you can't run to one of the GVP range.

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with their added memory will make all the difference to these tasks and only take up one slot as opposed to two. If you have a 500, then the performance you get from DTP and ray tracing packages is going to be poor without a lot of memory or an accelerator card.

For ordinary graphics you won't see many benefits, except for the fact that programs will seem to run faster giving far fewer WAIT balloons and much more room for hi-res interlace pictures. And the tools will seem to work properly for a change rather than trying to draw through treacle.

Where accelerators really come into their own is in the field of ray tracing, where a lot of calculation is involved. As a friend of mine put it: "it means the concept of testing out an image before you render it becomes possible". What he means is that rather than using fast and dirty rendering techniques to give you an idea whether an image is working, you can render up a full-featured trace with all the reflections and stuff in it already.

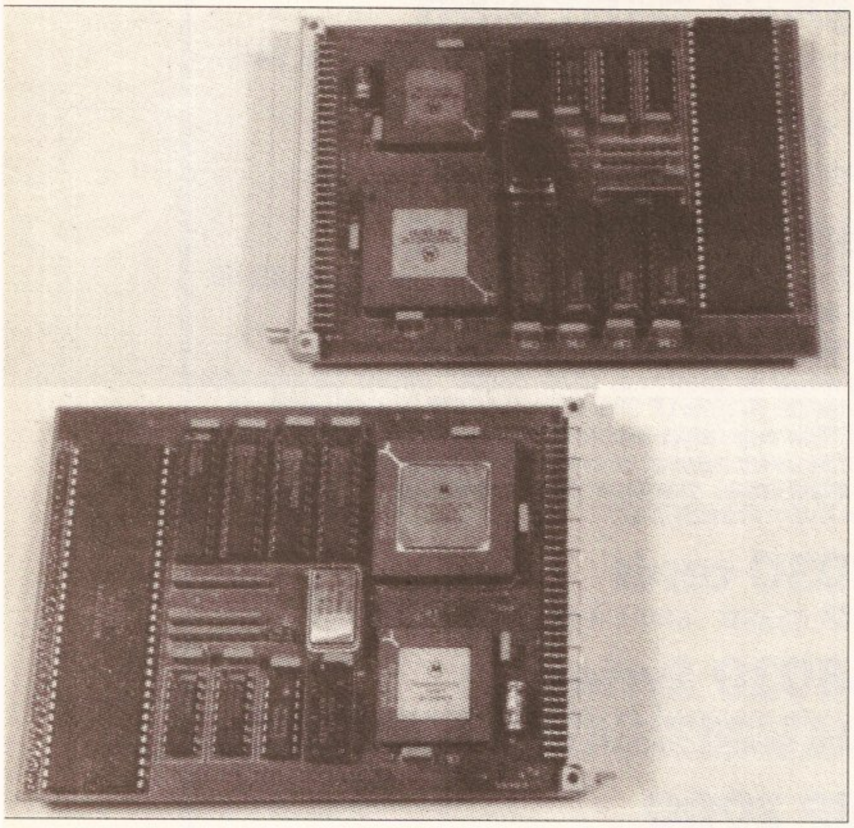
DTP is better with a faster chip because there's a lot less waiting around. An Amiga using *Pro Page* 2.0 with a 50MHz 030 is faster than a Apple Mac II using *Quark XPress*.

With animation you *really* feel the benefit. Animations are all much smoother, with none of the usual juddering. There's no stop before the animation repeats either, so the processor allows you to render animations to video in real time.

Finally, for 24-bit graphics, an accelerator is a must. You thought a normal HAM interlace picture took a while to render up to full strength, try waiting around for a 24-bit picture.

As you can see, the benefits are mostly graphics-based. Even so, there are general system benefits to be had by turbocharging your Amiga.

HARMS 030 AND 020



These boards are tricky to fit out of HARM's way in the A2000, but work in perfect HARMony in the A500. *(Quit the awful puns or I'll HARM you – ed.)*

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The little brothers of the HARMS Pro are both 68000 processor-socket daughter cards – you have to pop out the 68000 and fit these. They're very much like the B5000, which allows you to fit your own 68000 back in the card. Both the B5000 and the Mega Midget Racer were easy to fit in the 500 or 2000. Both varieties of the HARMS card were built for the 500, and I would recommend that it's probably the machine best suited for them as they don't quite clear the other components in the 2000.

Speed was good in the trials, but hampered by a lack of RAM, but a new, re-designed RAM card is currently being designed and should be available soon.

Nice jobbies

The HARMS are quite cheap to start off with. You can buy one without RAM to start with and, although you won't get full performance at the to start with, a RAM board can be snapped on later and away you go.

Small, cheap and powerful, and more suitable for the 500 really, although you can get the 030 and 020 into a 2000 at a push – and I mean a real push.

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CHECKOUT

HARMS 030 and 020

Speed 11/25
Fast but better with the 32-bit RAM. The 030 is 25MHz and the 020 is 20MHz.

Construction 8/15
Cheap-looking, though sturdy enough and the wrong shape for the 2000.

Software 8/10
Normal cocktail of SetCPU and benchmarks. It is the latest version of SetCPU however, so 8/10 for effort.

Documentation 9/15
German again, although looks to be as comprehensive as the Pro 030 docs.

Installation 14/20
Almost trouble free, unless you are fitting them in a 1500/2000. The little capacitors pop up too far from the motherboard and get in the way. Perfect in a 500.

Compatibility 10/15
Usual healthy dislike of the 2090, but otherwise a good runner with most of the boards tested.

AMIGA SHOPPER 60/100

Nice little products, both of them, and a shame we couldn't really crank them up to speed. Good value, especially the 030.

● ACCELERATOR SPEED TRIALS ● ACCELERATOR SPEED TRIALS ● ACCELERATOR SPEED TRIALS ●

The values given in the Sysinfo 2 test compare speed against that of a standard A1000. Eg, the standard 2000 is the same speed – 1 – as the A1000 and 3.26 times faster than the IBM XT.	SysInfo 2 A1000	SysInfo 2 IBM XT	Whetstones Time (secs)	Whetstones Whets/sec (x 1000)	Savage 2500 times (secs)	Float 10,000 loops (secs)	Sieve 100 times (secs)
Standard 7.16MHz Amiga 2000 (1Mb of RAM)	1.0	3.26	136.6	73	11.28	19.28	51.42
25MHz Amiga 3000 (8Mb RAM) Burst Mode On	10.40	29.7	6.78	1474	0.2	1.1	5.6
HARMS Pro 030 (030, 68882 and 4Mb 32-bit RAM)	9.6	31.6	9.6	1041	0.26	1.3	8.06
GVP 3001 (030, 68882 and 4Mb 32-bit RAM)	15.3	50.3	4.74	2109	0.1	0.6	4.28
Solid State B5000 (030, 68882 and 4Mb 32-bit RAM)	8.5	28.1	19.8	505	0.24	2.38	16.98
CSA Mega Midget Racer (030, 68882 and 4Mb 32-bit RAM)	11	36.1	11.7	854	0.20	2.04	15.22
HARMS 030 (030, 68882 and no RAM)	4.5	14.9	14.4	694	0.26	2.5	19.68
HARMS 020 (020, 68881 and no RAM)	4.5	14.9	20.24	494	0.38	3.4	19.26
ICD ADSpeed	2.0	6.6	N/A	N/A	N/A	N/A	24.64

The tests are done using SysInfo2, plus Savage, Float, Sieve and a standard Whetstone program. SysInfo is a super little program that analyses your current system to give you an idea of the performance you're getting from it as compared with other types of system. The figures are based on the speed of the current system compared to that of a bog standard Amiga 1000 and an IBM XT. The other programs are just standard benchmarks and they simply test how much the computer can do and how little (or much) time it takes the thing to do it. For fairness, the same programs were run on each board to give a clearer picture of what's what, but because the ADSpeed doesn't have an Floating Point Unit, some of the benchmarks don't work with it. The main speed test appropriate to that chip does, and that's the relative performance test from SysInfo.

On paper, the GVP job comes out streets ahead, but then at 50MHz you could have predicted that. But what is surprising is the amount by which it is ahead. For example, it is almost twice as fast as the HARMS Pro 030 and the B5000. Also, it is apparent that the CSA Mega Midget Racer is almost as good a bet as the GVP.

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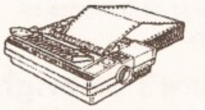
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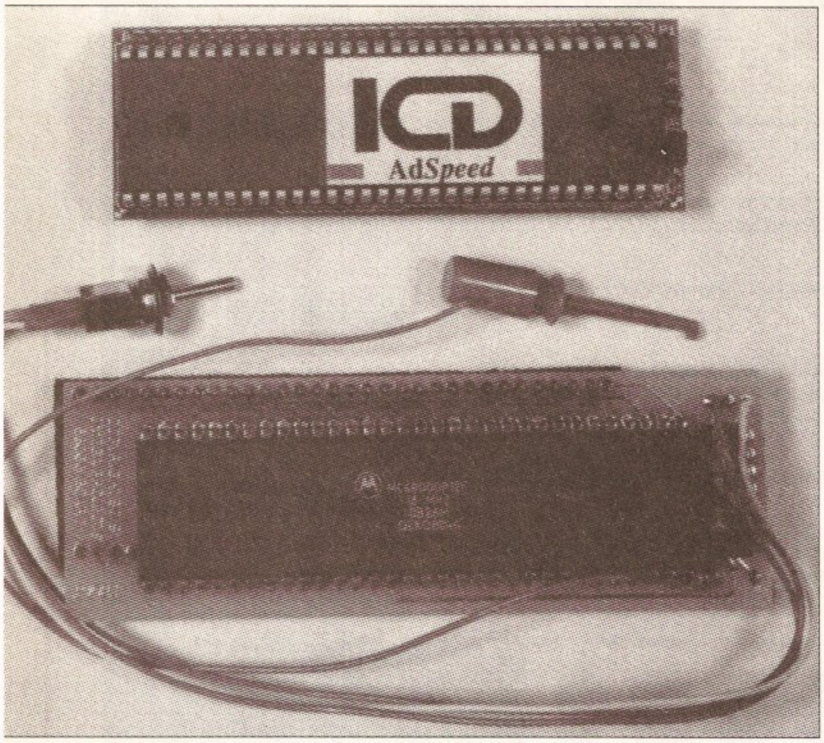
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ICD ADSpeed



Not so much an accelerator but a speedster of a chip that can double the speed of the Amiga and enables you to switch speeds on re-booting.

continued from page 34

The ADSpeed comes under the heading of a speedup chip rather than an accelerator as such. And, although it looks unimpressive in the face of all this other racing hardware, its ability to double the speed of your Amiga such that you can switch back to 7MHz mode without having to reboot is certainly not to be sniffed at.

The unit is a little 68000 chip on a tiny circuit board, with lots of other chips on and between it and the board. A neat little device and, being solidly built, it pushes into the slot with what the manual calls "moderate force".

The ADSpeed slots into the processor socket and the fallback mode is operated by activating a program from the CLI or Workbench, which can select the mode you want to operate in. The unit is trouble free and very compatible, but due to the lack of RAM speed there is no positive boost to performance for graphics purposes

The future's so bright

So that ends this exhaustive (not to say exhausting) roundup of accelerator cards and boards.

By now you will have realised that this area of computing on the Amiga is a real minefield. You have to be really aware of what you're doing before diving in. But the really nice thing is that they are all fairly, what I'd call, 'future proof'.

Computers have only just started to come fitted with faster processors, and so you'll be alright with your 030 for a wee while. Unlike computers which come with the things soldered in, you can whip it out and put in a new one when new and faster chips become available. The one way through the minefield is to consult a specialist accelerator dealer, which can advise you on what you need for your computer and save you trawling the ads and possibly making the wrong choice.

As the Amiga becomes more accepted in professional circles, speed boosters are becoming the thing to have in the same way that RAM and hard disks were the hot item a few years ago.

If manufacturers can take more care to include better fitting instructions (see my boxed out rant below) then the future will be rosy for accelerator cards, and if the Amiga continues to prove that it is the most expandable and powerful computer that money can buy, then the future for the Amiga is looking pretty damn pinkish too! AS

Checkout

ICD ADSpeed

Speed 10/25
Nice to be working in double speed, but no benefits to graphics users.

Construction 15/15
Tightly built little dynamo. I never knew there was so much in it.

Software 10/10
Brilliant software switcher for the two operating modes.

Documentation 10/15
Nicely produced manual with everything you need to know about your ADSpeed.

Installation 19/20
A snip to add to the 500 and 2000, with plenty of clearance for the components on the motherboard.

Compatibility 15/15
With the software switch, the unit is compatible with everything.

AMIGA SHOPPER 79/100

A well made and compatible alternative to other accelerator boards, although a little bit pricey considering the price of the HARMS 020 cards.

Dire documentation

Most of the cards come with fitting instructions of some sort or another. Some are thin booklets, others just come with a slip of paper which tells you what to do. The docs for most of the cards were not what I'd call adequate, as they give you too much technical detail without explanation of any kind.

As an example, the 3001 card has a fall back mode. The thing is that the only mention of this is on the outside of the box. Delving into the manual you discover that the method used for this is not through some slick software switcher, but by altering a jumper on the card itself. This is not a very convenient method. (Why can't the GVP card have the same facility as the Commodore and allow you to hold both buttons down on startup and choose the chip you want to run on a menu?)

It also transpires that you can fit a little pair of wires to the jumper and run these to a switch on the outside of the machine. But none of this is in the manual! And for the sake of a few pence, why wasn't this switch installed into the card? So be prepared for a lot of hit and miss. The docs are lamentably brief in most cases, as you probably gathered from the individual reviews.

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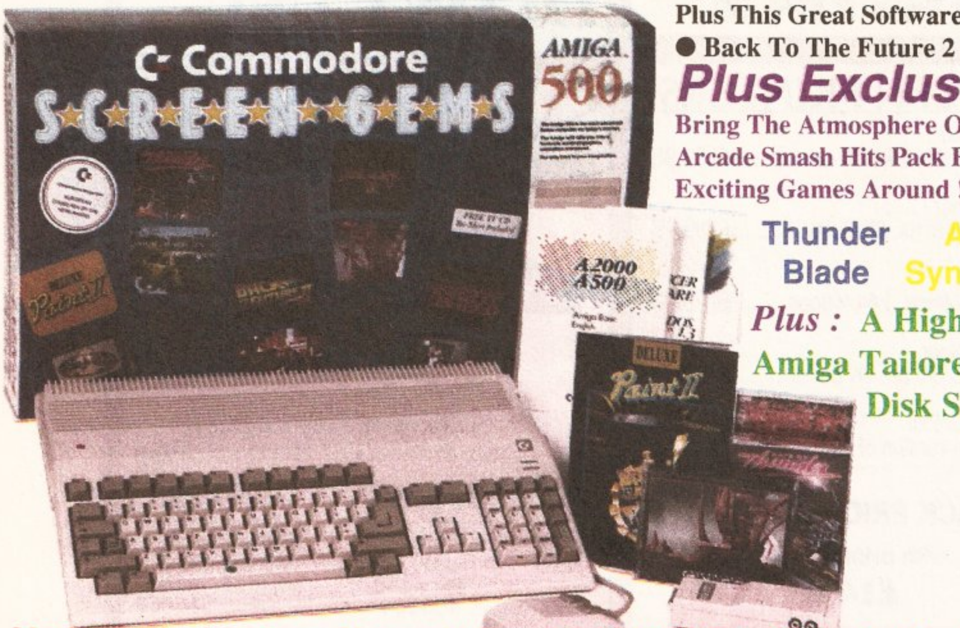
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Drag art

Demon dragster Jeff Walker smokes the wheels of Pandaal's new Daatascan and reports from the speed trap a tale of pixel-punishing performance



"It doesn't take long to realise, when involved in serious desktop publishing, that a scanner is essential. Pandaal's Daatascan aims to provide a professional solution, but is it effective? Let's find out."

Jeff Walker

A scanner of some kind has to be an essential piece of kit for the desktop publisher. Diagrams, illustrations and photographs are so much easier to handle when they can be pushed around and manipulated on the computer screen, rather than leaving holes in the copy and pasting bits of paper on to the final camera-ready artwork.

For the monochrome desktop publisher a hand scanner is the perfect partner. New from Pandaal Marketing is the Daatascan. Its scanning head is a standard quality Marstek unit (the exact same one supplied by rivals Golden Image, incidentally, made in Taiwan ROC)

"The Amiga is able to handle a much faster rate of data input than the scanner realises."

with a maximum scanning width of 105mm, four dpi settings from 100 to 400, four scan modes (three dithers, one text), and a brightness wheel control.

The 3in x 2in interface has about 7in of ribbon cable attached, on the end of which is a standard 25-way D plug that connects to the parallel port. There are two holes in the interface, one for the power supply unit and another for the 6ft long scanner cable.

But while it is natural to think of a hand scanner as a piece of hardware, that hardware is only going to be as good as the software it uses to scan images.

Amiga look-and-feel

Pandaal's Daatascan Professional software is based on the design of the ST version but has been re-written for the Amiga so that it looks and feels more like an Amiga program.

Upon running, *DScanPro* opens three windows on its own custom screen. Down the left-hand side of the screen is a narrow strip of icons which duplicate commonly-used menu options. Next to this is the Settings window into which you can enter details concerning which resolution to scan at and the dimensions of the scan.

There are two preset page sizes, A4 and A5. Both of these are of greater widths than it is possible to scan in one go, the maximum being 105mm (about 4in), but are provided as an aid to scanning whole A4 or A5 sized documents – the theory being that you scan the document in two vertical halves and then paste them together to form the whole. There is an X-Offset gadget into which you can enter how far from the left-hand side of the on-screen page the scan should start so that, in theory, you can scan the left-hand half and then scan the right-hand half in directly next to it.

In practice, this sort of thing is extremely fiddly and almost impossible to get right. More important though is the fact that when set to scan at 400 dpi, an A4 page requires 1,933,526 bytes of memory (about 2Mb). This is purely for data, remember; on top of that you'll need memory for the program itself to run in, not to mention Workbench and any background programs your startup sequence may have launched.



Taken straight from June's cover, scanned at 300 dpi using the lightest brightness and the largest dot setting. You can even see where our production editor's brain has fallen out onto his earlobe. ***(Any more quips like that and I'll Guru yer grey matter matey – prod ed.)***

More chips please

When booting from hard disk and running *DScanPro* from its icon, I found that 3Mb of RAM was not nearly enough to allow a 400 dpi A4-size page because the program requires almost two million bytes of un-fragmented (contiguous) memory to work with.

We must be careful not to blame the software for this – the scan will be a bit image of approximately 3,300 pixels wide by 4,700 high and any bitmap that large will require 2Mb of memory no matter what program creates it, but it should be clear in your mind that if you want to scan whole A4 pages, large amounts of RAM, if you haven't already got it, must be right at the top of your shopping list.

It's just as well that *DScanPro* allows you to create much smaller pages so that you can scan the exact size you want – a more common requirement by far; the dimensions are typed into two string gadgets in either inches or millimetres. A standard 5in x 4in photograph needs 400,000 bytes at 400 dpi so, although the software will run on a vanilla Amiga 500, 1Mb has to be

continued on page 42

WHITHER TO DITHER

The best dither pattern to use for scanning most black-and-white photographs and coloured illustrations is usually the middle one of the three. It produces a halftone effect similar to that seen in newspapers and, indeed, this magazine.

While the smallest dot setting catches the most detail, the dots are, in most cases, so close together that the differences between grey levels is hardly noticeable, which means you will see large black areas where there should really be a number of subtle levels of grey. The results are only slightly better than those obtained by photocopying a photograph and will reproduce poorly.

However, if you are scanning in fine detail from a photograph, this is the only setting to use.

The middle dither setting basically creates larger dots than the first setting, and larger gaps between the dots, so although fine detail will begin to disappear, the overall image will be much more visible.

The largest dot setting is particularly useful when trying to get acceptable results from colour photographs. The many subtle shades of all the different colours are usually too much for the other two settings to handle. Also, finer detail, which often gets completely lost in a sea of black, can often be rescued because of the lower resolution of this dither pattern.



While use of the middle dither setting produces the best halftone effect, coloured photographs contain too many subtle shades for the dither to handle, even when you've got the brightness control turned to the lightest setting.



If you use the largest dot setting available, resolution goes right out of the window. However, the whole scan appears much lighter and background detail becomes visible.





Coloured illustrations scan a good deal better than photographs, airbrush work especially so. Both of the scans shown above are at a resolution of 300 dpi using the middle dither pattern setting.

continued from page 41

the realistic minimum for anything but the smallest of lo-res scans.

To the right of the Settings window is the scan display window. This can be dragged and re-sized to display as much of the scan as possible – scroll gadgets allow you to view the rest. The image you see is at normal 75 dpi screen resolution; there is no shrink option to let you view a much reduced representation of the whole scan, but this is not a serious omission.

Scan quality

DScanPro does a real-time scan – as you drag the scanner, the image is built up on-screen at the same time. It reads in and displays the image very quickly indeed.

Although the scanner has a small LED, which flashes when it thinks you are moving the scanner too quickly, my experiments have shown that this warning can be totally ignored because the Amiga is able to handle a much faster rate of data input than the scanner realises. Except, that is, when scanning at 400 dpi; this results in short horizontal lines scattered all over the scan, no matter how slowly you drag the scanner, making for a lot of touching up.

To be fair to Pandaal, the manual admits this fault and blames the Amiga for not being fast enough. Indeed, when tested with a 68030 accelerator card fitted to the Amiga, the problem went away. But however honest Pandaal is being in admitting the flaw, it doesn't change the fact that the Daatascan isn't useful to scan at 400 dpi unless you have speed-up hardware attached.

Having said that, the difference in output quality between 400 and 300 dpi, at which resolution there are no glitches, is so small that I didn't lose any sleep over this little bug. Also, the glitches aren't so obvious when using any of the three halftone settings because they mostly get lost in the dither patterns.

DScanPro uses an 8x8 dither pattern to represent up to 64 levels of grey – all the rival scanner software I've used employs a smaller matrix to

BLITS

David Cronenberg wrote and directed the 1980 film Scanners, an offering that featured lots of exploding heads. If you've ever tried running the average DTP package from a single drive machine, you'll know all about this unsavoury phenomenon.

& BOBS

represent 32 grey levels. When outputting at 300 or 360 dpi, the extra 32 greys are not completely apparent – there comes a point above which dither patterns contain so many black dots that they all appear on the printed page as areas of solid black. The difference is more noticeable at the lighter end of the grey scale, but I am not convinced that the perceived difference in output quality isn't wholly in my mind. However, the point is that 64 greys are better than 32, and the extra levels certainly do no harm.

Working on the image

Any part of a scanned image can be isolated in the normal click-drag-release manner of art packages. This box becomes the 'current area' and has handles around its edges so it can be expanded in any direction in case your initial drag wasn't quite accurate enough.

Once copied or cut to the clipboard – which appears on-screen as a separate, draggable, sizeable and closeable window – simple vertical and horizontal flips are available, plus the option to invert (map black to white, and vice-versa) the whole image.

There is a 90-degree rotate tool, but because medium resolution

continued on page 44

JARGON BUSTING

BIT: A binary digit, with a possible value of zero or one – the way data is stored in memory.

BITMAP: A bitmap consists of one (for monochrome images) or more (for colour) bitplanes. Each bitplane is an area of memory where every binary bit corresponds to a pixel on the screen.

COPY: Existing text which is ready for setting.

DITHERING: The juxtaposition in varying densities of black and white (or coloured) dots to create a grey scale (or more colours).

DPI: Dots Per Inch – a method of measuring the resolution of scanners, printers et al.

IFF: Interchange File Format is a means by which data from different graphics or sound sampling programs is saved in a compatible way. It allows data to be exchanged between programs very easily and avoids the situation on, say, the PC where dozens of different graphics packages each save data in incompatible formats.

PIXEL: A picture element – one of the tiny rectangles that make up a computer screen. A pixel is the smallest addressable area on-screen. Resolution is measured in terms of number of pixels displayable across by number of pixels down.

JEFF'S SCANNING TIPS

Despite what the manuals tell you, the centre position for the hand scanner's brightness control is not correct for most purposes. It is going to depend entirely on what it is you are scanning.

Most colour photographs, for example, are going to produce very dark dither patterns, so for best results you should turn the brightness wheel to the lightest possible position. The same is largely true for scanning black-and-white photographs and coloured illustrations.

To get the best quality hardcopy from photographs – or for that matter anything else scanned using one of the three choices of dither patterns – you need to consider the resolution at which you will be printing. Remember that the scan will be saved as a 75 dots-per-inch IFF, so if you load it into an art or DTP package and output it at a scale of 100 per cent, 75 dpi will be the resolution of the hardcopy as well. If you've scanned it full width (4in) at 300 dpi, then it will be also be very big – 1,200 pixels wide, which is 16 inches.

To get 300 dpi output from your laser or deskjet printer you need to reduce the scan by a factor of four. Why? Because 300 divided by 75 equals 4. To arrive at a correct scaling figure, divide 1.0 (100 per cent in other words) by your reducing factor of 4 to get 0.25 – so if you scale to 0.25 (or 25 per cent in some packages), the resulting hardcopy will reproduce at exactly the same dimensions as the original, provided you scanned it in at 300 dpi. By the same token, if you scanned at 400 dpi then the hardcopy will end up 33 per cent bigger.

Any scaling figure greater than 25 per cent will result in larger dots – 50 per cent, for example, will produce dots which are twice as large, effectively producing 150 dpi hardcopy. Anything smaller will result in loss of data and picture quality because the printer is incapable of printing dots smaller than 1/300th of an inch.

If you need to reduce the size of the scan to something smaller than the original, then re-scan the photograph at either 200 or 100 dpi, and scale again to 25 per cent. Obviously the results will be less sharp, but they will be much better than the results of scaling a 300-dpi scan to under 25 per cent.

Of course, these figures only really make sense if your printer's highest resolution is 300 dpi. So what about dot-matrix printers that output at 360 dpi?

Well, using the same maths, divide 360 by 75 to get your reducing factor, which works out to 4.8, and then divide 1 by your reducing factor of 4.8 – the result is 0.208 to three decimal places. So a scale of this (or 20.8 per cent) is the figure to use to get best results from 360-dpi printers.

For 240-dpi printers, such as nine-pin Epsons, the figure is 0.313. If your printer works at none of the resolutions I've mentioned, then simply repeat the calculation starting with whatever the printer's highest dpi is in the X (horizontal) direction.

The same maths hold true for straight two-tone scans of things like black-and-white line drawings, text and logos, using the setting on the scanner which is marked either with the word TEXT or with a large square dot.

But because there are no dither patterns involved (unless the image you scanned includes a pattern, of course) there is very little danger of 'runs' and 'ladders' creeping into the hardcopy.

This means you can scale the image up and down to your heart's content and get fairly good results, although the most accurate representation will always be that produced by using the correct scaling figure, as discussed previously.





Scanning two-tone line art is what hand scanners excel at. The larger detail is scaled to 0.5 and shows signs of the jaggies, but the smaller dump of the whole cartoon is scaled to 0.208 -- read this tutorial to find out why -- and is good enough for me.



Shown is the same black-and-white photograph scanned at the four different resolutions using the middle dither pattern setting.

continued from page 43

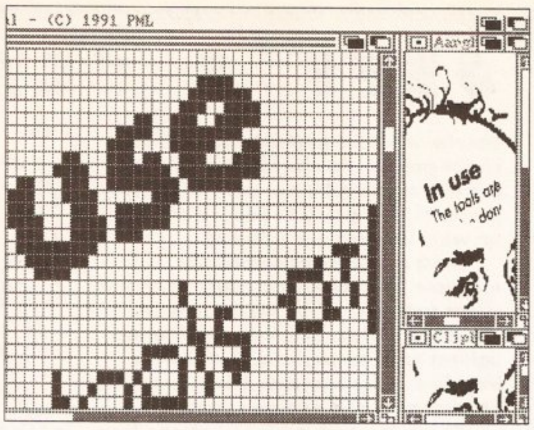
pixels are not square (640x256 is the only resolution the software allows) any such rotation distorts the image so that it is half as wide and twice as long as it started. This isn't a major inconvenience as most desktop and word publishing programs allow you to re-scale the image after importing it anyway.

The image editing feature I find most useful is something called Crop, which is basically the opposite of Cut. Once an area has been marked by dragging a box around it, instead of cutting that area to the clipboard, Crop erases everything outside the box, moves the now smaller image to the top left of the window and then automatically re-sizes the page to the size of the cropped image. Somehow this operation feels more comfortable than cutting or copying the boxed area to the clipboard which, in effect, does the exact same job.

Clipboard capers

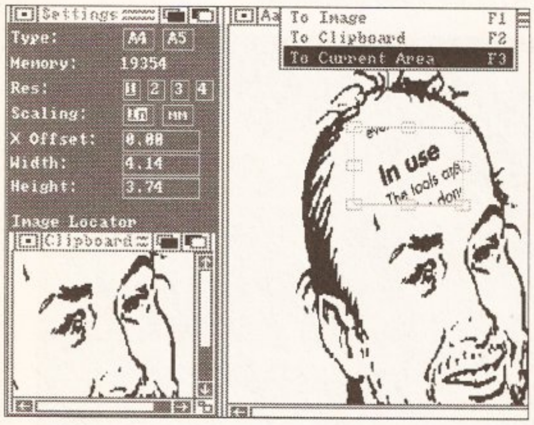
Pictures can be scanned straight into the clipboard if you like, without affecting the main image, and at a different resolution. Afterwards you can paste the clipboard image on to the main image using either a white (replace) or transparent background. Alternatively, you can drag out a box in the main image window and then scan directly into this current area, again at a different resolution to the main image if necessary. These apparently simple features make messing about and mixing images an easy and fun thing to do.

Image editing is only possible at the pixel-by-pixel level in high (x8) magnification. There are no line or box tools, nor any automatic image clean-up options. Touching up a 'dirty' scan in this way is a rather laborious and boring job – further software is needed if any sort of image editing or manipulation needs to be done.

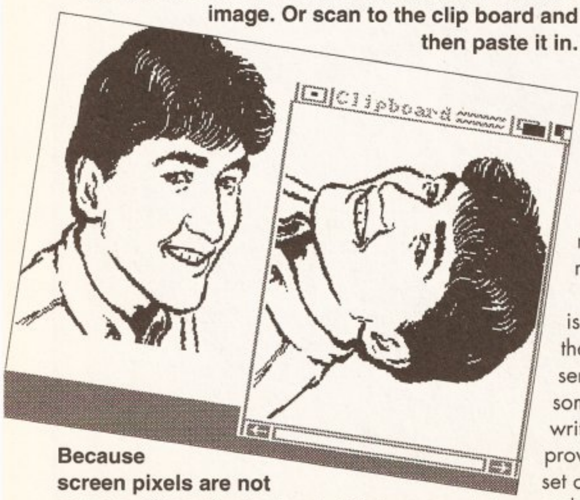


The only drawing tool in *DScanPro* is this pixel-by-pixel editing in the Zoom window. Note that all three windows (Image, Clip and Zoom) can be re-sized, dragged and closed.

OK, most Amiga owners will have one version or another of *DPaint*, but this isn't really the answer because, as mentioned earlier, full width images scanned at 300 dpi result in massive bitmaps of more than 1,200 pixels wide, and something scanned from a full length A4 page would be way over 3,000 pixels high – more than 13 (thirteen!) normal med-res screens deep.



***DScanPro* enables you to scan directly into an area (circled) at a different resolution to the main image. Or scan to the clip board and then paste it in.**



Because screen pixels are not square, *DScanPro*'s simple 90-degree rotate distorts the clipboard image. This can be corrected by rescaling in your DTP package.

DPaint simply cannot handle such massive bitmaps. If you have 1Mb of chip RAM and a bucketful of fast RAM, and if there's a Q in the month, it might load. If your lucky. Mostly, *DPaint* will freeze or crash spectacularly. But even if you can load the bitmap, it will require so much memory that *DPaint* will not let you perform any useful operation on it. Something as simple as attempting to pick up a small brush will more often than not result in a 'not enough memory' message.

Which is why it is important for scanners that want to be taken seriously to come with some kind of purpose-written software that provides a comprehensive set of image manipulation and drawing tools. *DScanPro* doesn't.

To put this into perspective, it has to be said that all rival Amiga hand scanner packages (including one yet to be released) fall down badly in this area too, being bundled with old versions of either *Photon* or *Deluxe Paint*. Except for the Golden Image scanner, that is, which comes with *TouchUp*, a program specifically designed by Migraph in the United States for editing and manipulating (albeit very slowly) all those massive bitmaps created by scanners.

A day's investigation failed to find a UK distributor that supplies *TouchUp* as a separate package, although HB Marketing now seems interested in doing so.

Limited linguist

IFF is the only picture format *DScanPro* understands – that statement isn't meant as a criticism, merely an observation – and either the whole page or just the clipboard image can be saved; either way, all IFFs saved by *DScanPro*, which are single bitplane (two colours, black-and-white), can be loaded back in.

DScanPro will not load IFFs containing more than two colours – this would require a complicated conversion process to change all the different colours into different black-and-white dither patterns. *TouchUp* provides comprehensive facilities to do this, although the results are often less than satisfactory and much trial and error with half-a-dozen or more dither options is involved. Hmmm, I keep mentioning *TouchUp*. Perhaps I had better convince someone to stock it and review it for you next month.

But how the combination of hardware and software feels when working with them is every bit as important as how 'good' it is. I have to say that given a choice of hand scanners, and despite (perhaps because of?) the no-bells-and-whistles software, the Daatascan is the one I reach for nine times out of ten. It's speed that makes the difference. A good turn of speed turns the scanner into an extension of your arm. AS

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CHECKOUT

Hardware 15/20
The scanner head is a standard 105mm Marstek unit featuring 100-400 dpi, four scan modes and a brightness wheel. The interface is small and unobtrusive, but when scanning at 400 dpi it throws data at the Amiga faster than the software can display it during the realtime scan, so glitches appear on-screen.

Software................13/20
Apart from the 400-dpi glitches, the scanning software does an excellent job, producing the highest quality results of any hand scanner I have used. The software's image editing and manipulation facilities are a little better than those of the software provided with the cheaper Geniscan, but they are way behind (although much faster than) the facilities offered by the software supplied with the GoldenImage scanner, which is about the same price.

Ease of Use 13/15
Connecting up the hardware takes less than a minute. Next to no setting up is required by the software – at its simplest level of use you can run the program, click on one button to scan, do the scan, click on another to save, and you're finished.

Speed 9/10
Very fast, but a little too fast for its own good at times (see Hardware, above).

Documentation.........6/10
A thin 20-page A5 manual quickly describes the operation of the scanner and the software, although both are so easy to use that you probably won't need the manual. At the price, however, I would have at least expected extensive tips on getting the best results from it, plus reasonably detailed descriptions of how the three different dithers work.

Price 16/25
As Amiga hand scanners go, the Daatascan is in the average price band at £179.95. What you are paying for is the interface, software and documentation because scanner heads have come right down in price. A metal strip is provided to help you scan straight.

AMIGA SHOPPER 72/100

I like it, but the 400-dpi bug needs to be fixed, even if it means not being able to scan in realtime at that resolution. Image editing and manipulation facilities could do with being extended as well. Pandaal says it will continue to develop the software – which is a sign of better things to come.

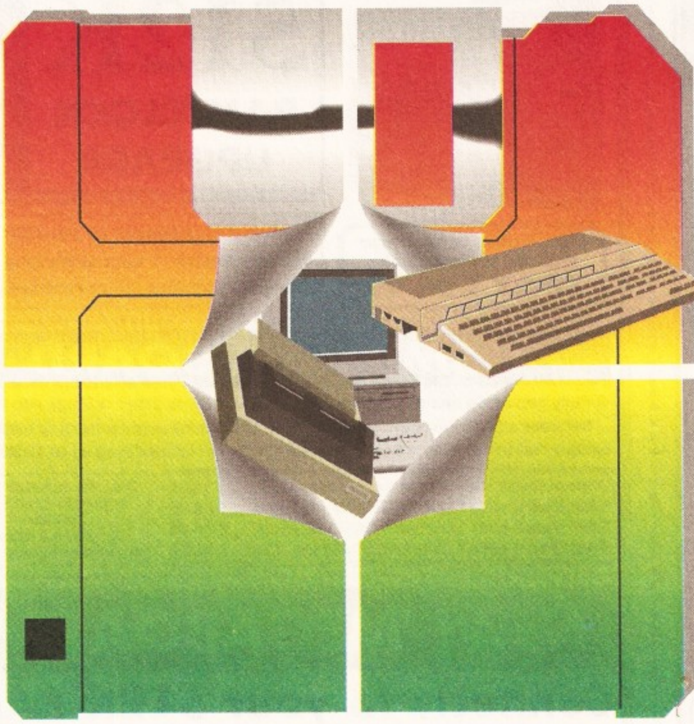
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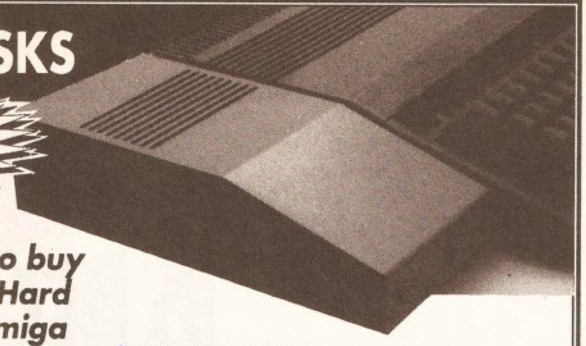
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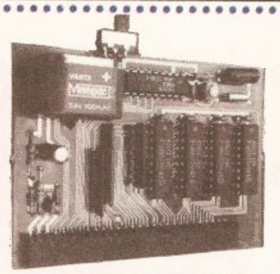
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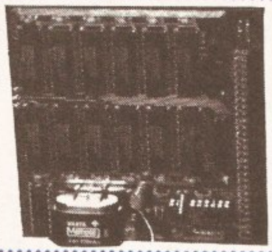
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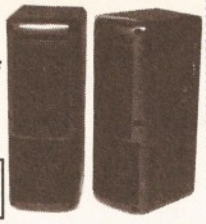


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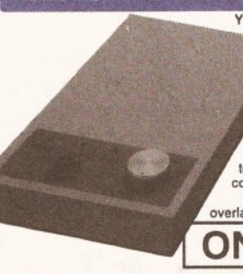
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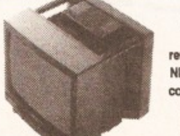
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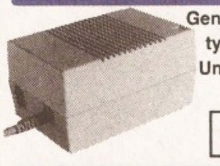
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Capital gains

Jeremy Patton offers a tutorial in the art of creating drop caps with Soft-Logik's popular PageStream

> "*PageStream* is a straightforward DTP application, but some simple operations can cause confusion. Here's a way round one of them."
> **Jeremy Patton**

First of all, how do you like our dropped capital? (Yes, the big F at the start of this article.) A drop cap draws the eye to where the writing begins. 'Start Here' it calls. Sometimes, different sized drop caps can be used to signal a main article and then to subsidiary pieces – 'read this first, then go to secondary articles'.

PageStream makes their creation easy – or, at least, easy-ish. So, let's start with some completed text:

❶ Draw a rectangle roughly the size of the letter you want. Click on the object icon – the arrow – and choose Text Runaround in the object menu.

❷ Click on the Text icon – the letter A – and click outside any text boxes. Type the letter you want and, clicking the object icon again, drag it roughly to size using a corner drag-box. Then drag the whole letter into place.

Make adjustments to the letter and the text runaround box to get the effect you want.

❸ Click on the rectangle and choose a clear line style so it looks as if the text is running around the letter itself.

❹ To tidy things up, delete the first letter that the drop cap duplicates, or you'll end up with an article that starts 'FFirst of all ...', or some such.

Ensure the first paragraph has no indent and, to really ram home the 'start here' effect, try capping up the first two or three words.

PageStream enables you to stretch the capital in any direction to get a range of effects. So play about till you get a look you like.

It looks more complex when written on paper than it actually is to do on the Amiga. I managed the process in exactly two minutes, and most of this time was spent waiting for the screen to refresh.

The old and tedious method of chopping out the drop cap with a scalpel and pasting it on to the copy manually can now be consigned to the cutting room floor. And will probably end up stuck to the sole of your shoe, but then, such is life.

Quick hints

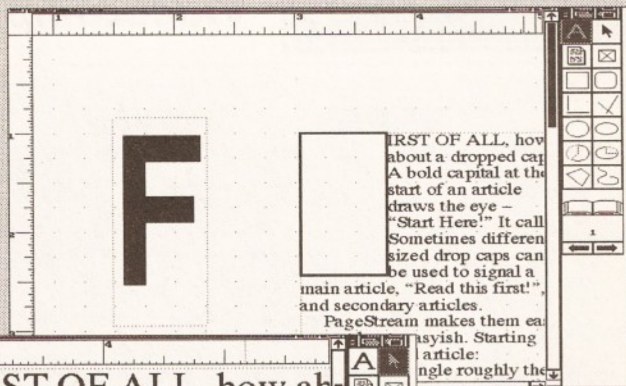
1 Proper opening and closing quotation marks, eg "and" looks much better than "and". They can be created by typing Control+C followed by "o for the opening quote and Control+C followed by "c for closing. Better still, define a macro. I use f2 and f3. Full details are in the appendix of the manual.

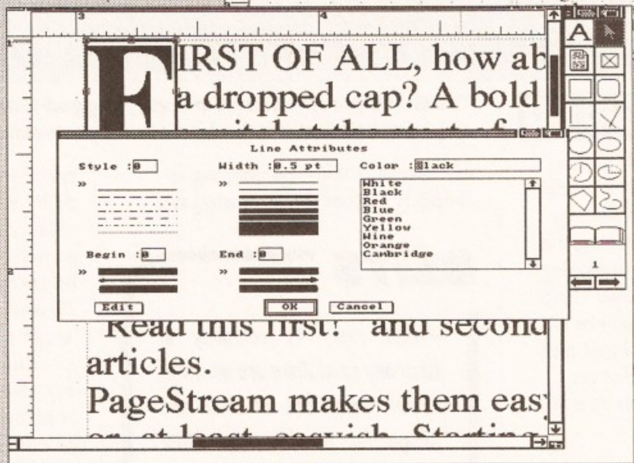
2 *PageStream*'s Attribute Pickup is a powerful way of tagging text, but sometimes it makes it difficult to stretch text as you need to in the Drop Caps example. No problem. If the text won't stretch, open a new document – a business card is big enough – type your text on that, copy it as a graphic object to your document and stretch it to your heart's content.

Of course, there is a proper way of getting the same effect, but this little shortcut is much quicker. AS

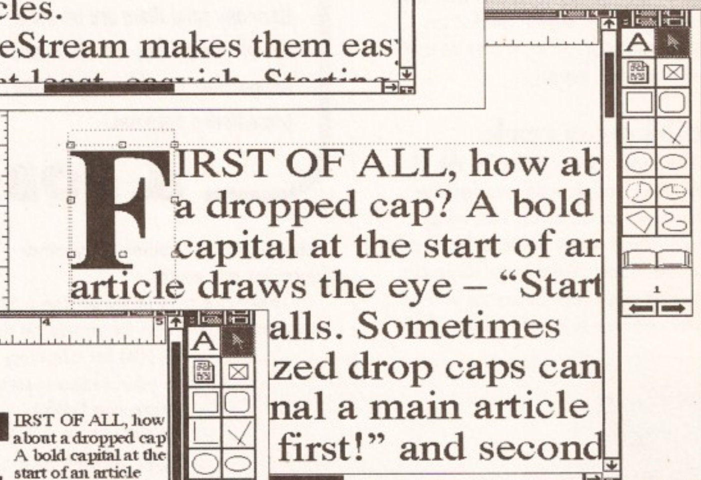
GETTING A DROP ON

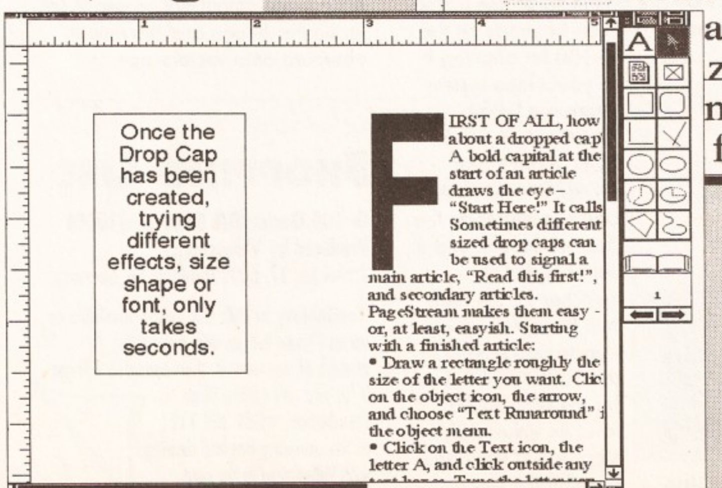
Here we see the drop cap on the pasteboard ready for dragging. Leave the text-runaround box showing in case you want to adjust it, then switch Linestyle to clear.





With the letter now in place, the line around the box can be set to clear so the text appears to run around the letter itself. It's looking smarter already.





Once the Drop Cap has been created, trying different effects, size shape or font, only takes seconds.

Now it's time to firtle about with the box sizing (above) to tidy the intro text up a little. Have a look through this magazine to see how drop caps work in our articles.

If you're feeling really adventurous, or some might say tasteless, you could try doing the drop cap in a different type style, or stretch it, distort it and otherwise induce nausea in your readers.



"Desktop video is an expanding field and the Amiga is right there at the front of it. When it comes to gearing up, I'll keep you in the picture."
Gary Whiteley

Operation overlay

In a two-part video column, Gary Whiteley puts Videocomp's G-100 genlock through its paces



The G-100 presents itself in a very rugged-looking rack-mount casing, emphasising that it's the sort of unit professionals will be relying on.

Videocomp G-100

The Videocomp G-100 is a fully professional, 19" rack-mountable genlock for any Amiga computer, taking the RGB from the Amiga and outputting YUV, Y/C, Composite (called FBAS in Germany) or RGB. It also has a DSK output, a Black Burst input and an Amiga RGB signal out for an Amiga monitor. Also, it has its own built-in power supply.

Solid as a rack

Unlike most other genlocks, the G-100 does not directly overlay the Amiga signal on to an incoming video signal – you have to have a suitable video mixer in order to do this. This apparent omission will no doubt confuse a lot of readers, but the reason is this – genlocking is simply a way of synchronising two video signals together. Any other functions are extras.

There are a number of fine tuning adjustments that can be made on the G-100 for aligning it to your video system. There are LUMA, CHROMA, R, G, B, SUBCARRIER and HORIZONTAL PHASE potentio-meters on the front of the unit and a set of eight DIP switches on the rear; two being for setting coarse adjustments to the SUBCARRIER, two for the DSK output level (to either 0.7 Vpp or 1.0 Vpp) and whether the key is positive or negative, and the remaining four for setting the delay timing to make sure that all video signals entering the mixer arrive at the same time. Timing can be set to combinations of 280, 140, 70 and 35ns and depends upon the length of the cables in your setup.

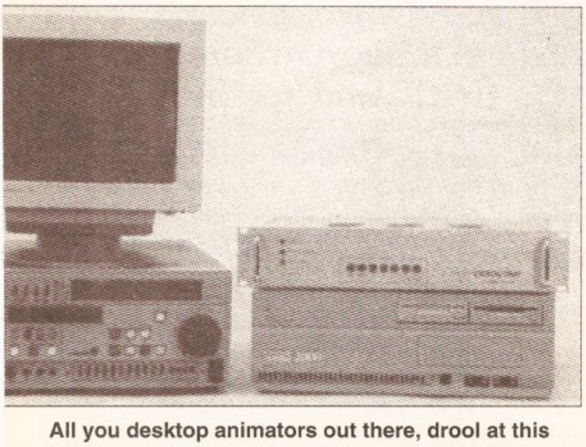
The G-100 can be connected to any vision mixer, either as YUV, Y/C or composite. The RGB signals can be connected to a chroma key input on a vision mixer or other device capable of producing a chroma key.

Flying colours

So, it's off to a professional studio in Berlin to test it *(so it'll be RGB splitters in Barbados next month will it? – ed)*. A standard colour bar screen is set up on the Amiga and the output observed on a vectorscope and waveform monitor. Everything looks very close – black-and-white is solid but the colours are slightly out. Some quick adjustments to the panel later and the unit is up and running to broadcast specifications. And the pictures on the TV output are pretty sharp, too. AS

BLITS & BOBS

Almost every TV company in Germany (and there are an awful lot of them) has at least one Amiga for graphics and other presentation purposes.



All you desktop animators out there, drool at this £7,500 pro video and G-100 with A2000 setup.

SHOPPING LIST

G–100 GenlockDM 5149 (@£1800)
Produced by Videocomp,
Berner Str. 17, 6000 Frankfurt 56, Germany.

Availability in UK: Not readily available as far as I know but, as with everything, if enough of you want it, then someone will get it for you. Try calling Silica Distribution, ☎081 309 1111 as the company has had dealings with Videocomp in the past.

CHECKOUT

G-100 Genlock

Documentation.........7/10
(English Version) – brief but concise. But you really would have to be a video user, as a lot basic knowledge is assumed.

Construction.............9/10
Solid, rack-mounting unit, feels very strong, all controls are easy to get at except DIP switches, although you'd only really need to set these very occasionally if the G-100 was a permanent addition to your studio.

Features.................13/15
RGB, YUV, Y/C, Composite and DSK. Which covers most of the popular video signals used by man.

Ease of use............18/20
Plug in, adjust and you're off.

Price 17/20
Difficult to judge this, as German prices seem to be lower than those we are used to in the UK. But I think that if you need this kind of equipment then this is likely to be a very good buy.

Quality 23/25
I must admit I only saw YUV and composite outputs running (as no S-VHS or RGB equipment was available) but I was very impressed indeed with the quality. But then, at the price, you'd expect it.

AMIGA SHOPPER 87/100

If you're a run-of-the-mill Amigavid user, then this is a very expensive piece of kit. But it's designed for professional results, using high-end professional equipment. As such, it is rather inexpensive, though compared to the total cost of a professional edit suite, this product is reasonably priced.

Entitled opinion

And now, the venerable Mr Whiteley rates the latest 'professional' Video Caption Designer *from Shirekilo*

Caption Designer

Here's yet another video caption designer that calls itself professional. Developed from software used on Channel 4's *Network 7* and ITV's *Chart Show, Video Caption Designer*, by Shirekilo, arrives in a light-grey, A5 manual package on a single disk. The software comes supplied with eight fonts and can be loaded on to a hard disk.

Up and running

Loading is easy (from CLI or Workbench), but then you get your first surprise. The mouse doesn't work. According to Video Caption Designer's distributor MAZE this is because users of such professional TV devices as Aston caption generators aren't familiar with using mice. Well, I am and, since this package is for Amigas, not Astons, I have found my hand continually drifting onto the (now useless) mouse. I had the same problem with JDK's Pro-Video. Other programs, such as *SCALA* and *Broadcast Titler* 2 (which, like *Pro-Video*, are obvious competitors to *Video Caption Designer*) have both keyboard and mouse action. Like *Video Caption Designer, Broadcast Titler* 2 can be entirely keyboard driven if necessary.

So, from this point on, all entry to the program is done via key presses – from selecting menus to activating playback. It was a strain, constantly having to read the screen and then look at the keyboard and type letters, and slowed things down considerably. More time was spent reading the screen than actually creating captions. Even fast learners will be hard-pressed to get to grips with the package quickly.

> *"It isn't possible to have text with both Border and Shadow simultaneously."*

Water the gripes

OK, gripes aside for now. We'll find out what *Video Caption Designer* actually does. As you would expect, *Video Caption Designer* has page transitions (including roll and crawl), supports all screen modes, loads IFF files as backgrounds and can use any Amiga font (including ColorText fonts). It also has time functions (VTR start clock and on-screen analogue clocks), test functions (colour bars and screen position), 8 built-in fonts and can be externally triggered.

As with all caption generators, first you generate the page sequence, set the required transitions, test,

continued on page 52



Just a few of the possibilities available with Shirekilo's new package, but one or two desirable features, such as italicising and underlining text, are sadly lacking.

JARGON BUSTING

BLACK BURST: A video signal with no picture information (ie 'black' only) which is used for synchronising all video equipment in a system.

CHROMA KEY: A commonly used effect by which a person or object is placed against a coloured background (generally blue or green) and the background is electronically removed so that only the subject is present. The subject can thus be placed over a new background. Commonly used in pop videos, weather and news presentation.

CHROMINANCE: The colour hue and saturation information in a video signal.

COMPONENT VIDEO: This is where various component parts of the video signal, such as chrominance and luminance, are kept separate from each other. This can give a better quality picture than composite video as the components can be processed separately.

DOWNSTREAM KEY (DSK): This is a way of superimposing a graphic over the output of a vision mixer without affecting the mixed picture (ie a caption could be placed over a mix sequence without the need for any extra editing).

GENLOCK: A way of slaving one video source (eg Amiga) to another (eg video) in order to synchronise their signals together to allow stable wipes, mixes and other effects, including overlay (key) between the two sources.

LUMINANCE: The monochrome part of a video signal which carries the 'brightness' information.

RGB: A colour video picture in the form of red green and blue components.

SUBCARRIER: A 4.43361875 MHz signal, used to set the colour phase of a video signal.

YUV: Component video signal, composed of a Luminance signal (which also contains the green component) and two Chrominance components (Red and Blue) – as used in Betacam SP and M2 formats.

Y/C: The component system used in Hi-8 and S-VHS, by which Luminance and Chrominance are separated for better image quality than ordinary composite video.

HORIZONTAL PHASE: sets the horizontal position of a video picture.

WAVEFORM/VECTORSCOPE: Video test equipment which is used to ensure that the tested video signal conforms to specifications as measured against pre-defined markings on both the waveform monitor and the vectorscope screens. Used extensively in quality video and TV work.

continued from page 51

correct and finally play it all back.

Likewise, with *Video Caption Designer* you select your font, colours, edge effects etc, backgrounds, transitions and speeds. I'm not going to describe the whole routine (as it's too tedious) and anyway, the major functions of all caption generators are the same. So let's get on and type some pages....

Into context

Right, we've typed in the text. Now we want to spice it up, of course. How about changing that line to another font? Easy; select Line and then decide which of the eight loaded fonts you want to use. All text, from the cursor forwards, changes to the new font. Change the colour? No problem – hit Pen and change the colour using the cursor keys. Justification is just as easy, as are effects such as shadow. Make no mistake, everything works OK.

It's just that it doesn't work *great.* There are limitations peppered throughout. For instance, it isn't possible to have text with both Border and Shadow simultaneously. Why not? There is no way of re-positioning the shadow and it (like the size of an outlined (Bordered) letter) is limited to a maximum of four pixels. A real palette would be nice too. Most of the supplied fonts are lacking style, so it's necessary to load some more presentable ones.

Is there anything it does well? Well, yes actually, there are a few novel ideas here. One I particularly liked was a kind of memorising feature which follows the actions you make when playing back a sequence, then in subsequent plays (triggered by the Again command) it will reproduce these actions exactly as you did them. It's hard to describe, but this would be very useful if you wanted your caption sequence to fit into specific places on a video and you were simply matching the captions by eye to a shot and hitting any key on the keyboard to set off the next caption transition. Then, when either a key is hit, a Gameport trigger is received or when the sequence is triggered by a connection to the serial port from a remote device such as an edit controller, your caption sequence should follow the action perfectly. This could well be a very handy feature, so nice one Shirekilo for that.

Clocks

Other features worth noting are the various clocks (VTR start clock with a choice of start time and audio tone, large real-time analogue clock or small, lower-right-like-*Breakfast-TV* clock), colour bars for setting up monitors and a position screen for aligning your Amiga or other monitor.

Video Caption Designer also has a template system, enabling you to define all the characteristics of a page, so that if you regularly use the same format (or need to make a lot of identically structured pages) then all you need do is load the required template. Any subsequent typing will conform to the template styles.

Other fairly useful functions include simple boxing of text (although the box has no border options) and setting of background and box-fill patterns, IFF loading and, of course, roll and crawl transitions.

Tight but smooth

While undoubtedly very smooth in operation, I found that there were too many restrictions built in to make this program as creative as it really should have been. The only real line transition effect is Zip, which is a teleprinter-like effect. The Crawl worked OK, but couldn't cope with everything I threw at it (like mixed text sizes) and a Roll at speed one in hi-res interlace caused funny things to happen to my text – which quite spoiled the effect.

The transitions are adequate – nothing too spectacular. There is no possibility for making bold, italic or underlined text. Time spent by the program rereading current directories when loading is annoying and there is no facility to load ASCII files. There are also no line transition functions.

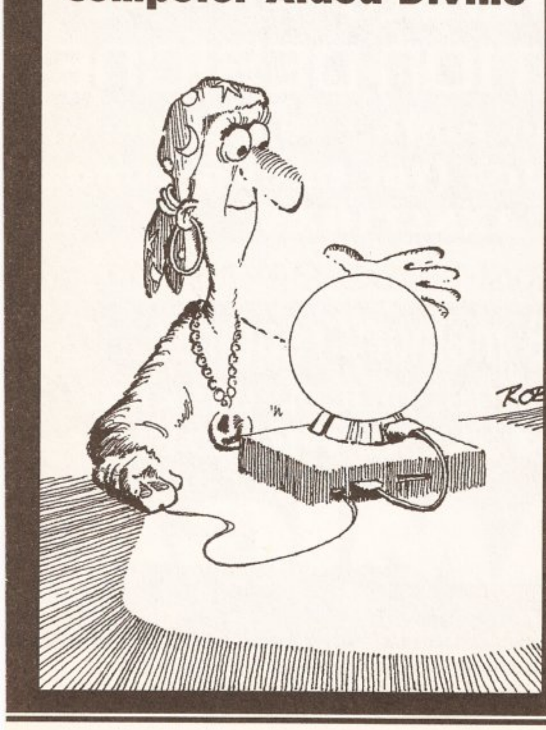
It would seem that in order to keep memory overheads low (remember, this software will work on an A500 with 1Mb – though not in its full glory) some essentials have been dispensed with. AS

Two things

First off, the management would like to apologise from its very bowels to Gray Whiteley; the victim of an appalling oversight last month. The *SCALA* picture on page 65 of *Amiga Shopper*'s June issue was inadvertently credited as being part of *SCALA*'s demo sequence. The picture was actually created by Gary. Sorry old chap. The offending sub-editor has since been strangled.

And second: those of you with modems, and a burning desire to discuss Amiga video in a 'baud' fashion, might like to know that Gary Whiteley is now on CIX as drgaz. See page 55 of *Amiga Shopper* issue 1 for more details on the CIX bulletin board. Thank you for your time. And now, a totally gratuitous cartoon ...

Computer Aided Divine



BLITS & BOBS

On the subject of creating images, there is one Hollywood director who is noted for his prolific output of films. Unfortunately, he is also noted for the fact that all his films are, in the eyes of his peers, crap. His name? Allan Smithee. His job? Pseudonym for disaffected directors who don't wish to have their names associated with a film they've just made. Dennis Hopper adopted the Smithee monicker for his very slightly appalling film, Catchfire, *after it suffered an inspired bout of post-production creativity by forces beyond his control. But then, moguls are like that.*

Shopping List

***Video Caption Designer* by Shirekilo** ....**£199 inc VAT**

Supplied by **MAZE Technology**
Zenith House,
210 Church Road,
Leyton,
London
E10 7JQ.
☎ 081 556 5620

Checkout

Video Caption Designer

Documentation.........7/10
The package comes with a run-of-the-mill A5 manual which explains all that you need to know.

Quality 10/15
The transitions are nice and smooth, but I didn't like the font styles as they appeared to be somewhat lacklustre.

Speed 13/15
There are no problems with the package's delivery in terms of output speed, but regular Amiga users may find inputting information to be a little slow in the absence of mouse control.

Features.................10/15
Video Caption Designer falls short on several important counts. Lack of text styling, line transitions and mouse usage all go against it, but some people may find the clocks, bars and memorising features very useful.

Ease of use.............14/20
Personally I found operating the package rather sticky going, although by no means difficult. With time and patience, most people could certainly learn to use this program if they had to.

Price 17/25
When compared to other video titling packages, such as *Scala* or *Broadcast Titler* 2, which were reviewed in issue 2 of *Amiga Shopper*, Shirekilo's offering seems overpriced, particularly considering the features it contains.

AMIGA SHOPPER 71/100

Losing on several counts, *Video Caption Designer* would not be my first choice as caption design software. It's either overpriced or under-featured, depending on how you look at it.

'State-of-the-art' and 'professional' are becoming as over-used as such phrases as "they'll be arriving tomorrow, honestly".

On reflection, I'd rather describe the package as NSOTA (Near-State-of-the-Art) and near-professional.

Requirements: Any Amiga with at least 1Mb of memory. Either a second drive or hard drive would help considerably.

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* Dithered 24 bit fill mixing
* Anti-Alias with tool or brush
* Loads, shows GIF exactly
* "C" source code available free
* Upgrade From BBS service
* Color or 256 greys painting
* 256 colour stencils
* Matte/colour/anti-alias/cycle draw
* Prints via printer device
* Auto enhance std IFF palettes
* Writes IFF24,GIF HAM-E

Image Compatibility:
* 24 bit IFF, 24 bit IFF with CLUT chunks; 2 to 256 colour standard IFF; half-bright, HAM. DKB and QRT trace; RGB8 and RGBN; Targa ; GIF ; Dynamic Hi-Res ; SHAM, ARZO, ARZ1, AHAM, 18 bit ScanLab; UPB8 brushes; All of the 12 different HAM-E format image file types.
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Picture this



"As an experienced Amiga graphics user, I can tell what's hot and what's not. There are lots of advances in the world of Amiga graphics coming along all the time, and it's my job to bring you the best reviews of hard and software every month. Let me help you choose all the very best buys."

Phil South

Phil South gives a detailed roundup of what is coming up over the next few months in the fast-moving and exciting world of Amiga graphics

Technology is a fast-moving thing, and nowhere more so than in the versatile area of graphics computing with the Amiga. New products spew forth with alacrity, each month bringing an extra widget with which to further extend the already impressive capabilities of your machine.

The next few months look like being an interesting time, as a host of manufacturers are launching all kinds of goodies. So, to prepare for this, here's a preview of the products you can expect to be reading about in my graphics column in the next few issues of *Amiga Shopper*.

The months up to Christmas are really going to be interesting as the standard graphics available to your average Amiga owner are about to upgraded in just about every direction you could wish for. The biggest boost is that 24-bit graphics, which brings with it more than 16 million colours, will soon be the norm for all users, whether big or small.

Of the many gadgets winging their way to the stores, the selection I've put together for you are by far the most interesting and useful.

HAM-E

Black Belt Systems (via its UK arm Checkmate Digital) has announced the forthcoming release of its HAM-E graphics enhancer system. The box works with all Amigas from the earliest NTSC A1000 right up to the most muscular PAL A3000.

Extended capability

The HAM-E is inexpensive, extremely compatible, and it "offers more performance for your money than almost any other graphics system for the Amiga", which I have to say, having seen one, is the truest bit of hype I've ever heard. Whereas a lot of firms have not decided to open up into the PAL/European market, HAM-E was designed with PAL in mind all the time, which puts BlackBelt ahead in Great Britain with this type of device.

The HAM-E provides you with two new graphics modes in addition to all of the original ones you have in a standard Amiga, and it does so in a compatible and interference-free manner. The HAM-E has two new modes: REG mode and HAM-E mode, which blend with the original modes to give you a total of 16 graphics modes.

- REG Mode: The first mode is 256 simultaneous colours from a palette of 16,777,216 colours. Resolutions available are 320 x 256, 320 x 512 (interlace), the normal overscan options both horizontally and vertically.

Feature film

Additional features include the capability to colour cycle any or all of the 256 colour registers, fully Genlock-able, sliding/overlapping front-back screens, no CPU overhead to maintain the image (unless you want to colour cycle and even then it's minimal) and completely IFF compatible. You can have 256 levels of grey-scale in this mode allowing all sorts of possibilities for image processing with VGA and other types of Mac and PC images.

- HAM-E Mode: The second mode is the Extended Hold-And-Modify, or what you'd call HAM mode. This mode provides 236 24-bit colour registers in four banks of 59, and full 18-bit HAM capability. Thus you could theoretically have 262,144 colours on-screen at one time (in the same way 'standard' HAM allows you to have 4,096), provided you had enough pixels on your monitor screen with which to display them all.

The HAM-E mode is genlock compatible, as it exists on a standard Amiga screen, and being fully IFF compatible, it supports colour cycling of any of the 236 colour registers, regardless of bank. This means it is compatible with any IFF based soft or hardware, including genlocks. Resolutions available are 320 x 256 and 320 x 512 interlace, plus the normal overscan options, both horizontally and vertically.

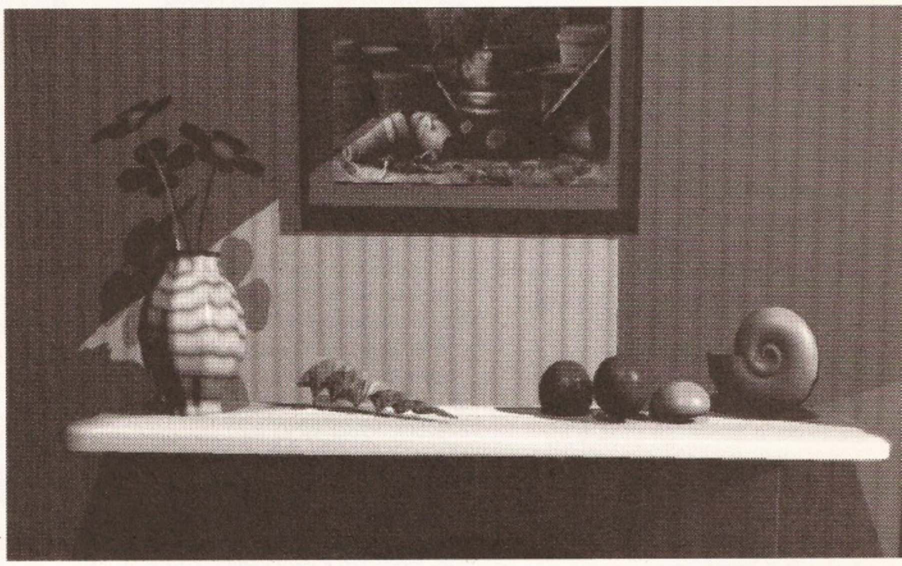
The HAM-E device attaches to any Amiga by simply plugging it into the RGB port (the 23-pin D connector at the back of your Amiga that you plug the monitor into) using a supplied cable, and then plugging your monitor or genlock into the connector on the HAM-E. Then you plug its power supply into a wall socket. That's all there is to installation; no need to change your system software in any way, or to add libraries or devices. Just turn it on and go, no fuss no muss.

Super turn on

You turn your Amiga on, and use *SuperView* (or any other show or slideshow utility that understands standard IFF images) to view the first HAM-E images (supplied on the demo disk). When you're not viewing an image that uses one of the new modes – for instance, if the WorkBench is pulled halfway over a new mode image – the normal screen looks just as it usually does and the portion of the new mode image looks exactly as it should also.

The point I'm making here is that the new mode images act exactly as if they had been designed into the

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Mega-quality 24-bit images will soon be within the financial grasp of most of us, opening up a whole new world of high resolution images.

Avast there MAST

MAST has always been known for its innovative yet occasionally vapourware products. The specs are exciting, but the results are rarely actually seen in the flesh. A notable exception to this is the new Colorburst 24-bit device which will be reviewed in the very near future. After a parting of the ways between MAST and George Thompson Services in the UK, HB Marketing has taken up the torch and will be selling this excellent device in the UK. More on this is a future issue of *Amiga Shopper*.



The new series of Harlequin graphics cards, by the Amiga Centre, Scotland, can give your Amiga some pretty amazing colour capabilities.

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system from the very start.

One very important difference between the HAM-E product and other, competing display adaptors is that the images are maintained in the Amiga's normal 'chip' memory, so you can use the blitter on them; that means animation and page flipping doesn't require the direct attention of the CPU – a critical point for people using standard animation programs.

A little bit more

Something else worth a mention is that the output from the HAM-E hardware is quality 24-bit RGB (or 12-bit when a normal Amiga screen is showing, and only for the portion that is showing) rather than composite video like the DCTV – a device that boosts resolution by putting out a composite video signal. Composite is very difficult to process, especially for video studio work. You can always turn RGB into composite or S-VHS, but not the reverse.

HAM-E works by operating on the video data coming out of the Amiga RGB port. For this reason, in a system using a Flicker Fixer the new enhanced modes will not be visible on the flicker-fixer's output monitor, only on a monitor connected to the HAM-E. The HAM-E is ostensibly a video tool and, as such, doesn't support de-interlacing. Yet.

Think of the output port on the HAM-E hardware as if it were the 23-way jack on the Amiga. All the same signals are there, on all the same pins, and they work as they always have under the same conditions. For this reason, external genlocks, composite and S-VHS adaptors and all monitors will continue to function normally as if the HAM-E wasn't there. It's as if the Amiga just sprouted some new video modes.

But how do you look at a HAM-E picture, and how does it work? Let's say you use an IFF viewer, such as *SuperView*, on a HAM-E IFF image. HAM-E works by storing extra palette data in the first four lines of the display and decoding them by use of a gadget in the corner of the screen where the close box is, called the 'Magic Cookie'.

The data for the first one to four scan lines will contain the Magic Cookie, followed by data for 64 colour registers. The rest of the image body will contain scan lines formatted as four bitplanes, each bitplane arranged as 320 pairs of bits per scan line. When this is displayed by *SuperView*, the line containing the first Magic Cookie triggers the HAM-E hardware and it then loads the colour registers from the rest of the trigger line.

If there are succeeding trigger lines (up to four), it loads more sets of 64-colour registers. Any line that is encountered that does not have a trigger in it is processed according to the mode selected by the Magic Cookie type (There are two types, one for each mode). If the Workbench is visible – say it's pulled up over the bottom third of the image – then the HAM-E system deactivates when it sees the presence of the c0 (colour zero) bit for longer than one scan line.

Here is a short checklist of features for the HAM-E, for those of you who like lists:

Cop this lot

- 256,000 simultaneous colours on screen in HAM-E mode
- Up to 236 directly usable colour registers in 8-bit HAM mode
- 256 simultaneous colours out of palette of 16 million, REG mode
- Complete colour cycling capability for 59 or 236 colours
- All colour registers are 24-bit accurate
- Both modes can be animated using standard ANIM type progs
- Both Modes are completely IFF compatible
- Both modes are supported by existing show and slideshow tools
- Both modes may be overscanned horizontally or vertically
- Both modes may be interlace or non-interlace
- High resolution menu capability
- No CPU overhead involved in maintaining the image
- No Blitter overhead involved in maintaining the image
- All normal Amiga modes pass through unaffected
- Amiga modes are still genlock-able
- Both new modes are genlock-able
- Image memory is Blitter and CPU accessible
- Screens are fully multi-tasking
- Works with ALL Amigas, PAL, etc
- Attaches to Amiga RGB connector only. No internal connections
- Quality RGB output, not composite video
- Externally powered, no load on Amiga system
- Affordably priced

The future

Interest in the developer community is rife, as they say, with companies ranging from Impulse (*Imagine* and *Turbo Silver*), NewTek (*DigiView* and *DigiPaint*), MicroIllusions (*Photon Paint* II), Electronic Arts (*DPaint*, *Deluxe Photo Lab*) and ASDG (*Professional ScanLab*, *ScanLab 100*) all enthusiastic and interested, and all having already ordered units from BlackBelt. Support for conversion to and from various Amiga, Mac and PC 24-bit file formats is supplied with ASDG's *Art Department Professional*. Plus, the HAM-E directly supports use with *DigiView* for its special DV21-format 21-bit digitised images.

The HAM-E looks like a winner on paper, but it remains to be seen if the software support side continues to gain momentum in the same way it has up until now. Either way, HAM-E will have a stranglehold over the low end of the UK 24-bit market before Digital Creations' DCTV even gets a distributor over here.

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G2 24-Bit board

One firm that does pay particular attention to the UK is G2. It produces high-end graphics and video solutions for the Amiga, and the VD2001 is its first 24-bit graphics engine.

The VD2001 is a very sophisticated piece of kit, and although Gary Whiteley will be reviewing it in detail as our resident video expert, I will also be featuring the device in the 24-bit graphics special feature coming up in *Amiga Shopper* issue 7. Look out for it.

JARGON BUSTING

BIT: A binary digit, with a possible value of zero or one.

BITPLANE/BITMAP: A bitplane is an area of memory where every binary bit corresponds to a pixel on the screen. One bitplane represents a monochrome image, several can be overlayed (a bitmap) to represent a colour image.

BLITTER: The Amiga's clever hardware blitter can move and alter areas of memory (usually graphics memory) at great speed. It is used extensively for animation.

CHIP RAM: This is the area of the Amiga's memory directly accessible by the custom graphics and sound chips. Originally a maximum of 512k, newer machines fitted with the fatter Agnus graphics chip can access 1Mb, allowing smoother animations and more screens to be displayed at once. The new Amiga 3000 comes with an Agnus chip capable of addressing 2Mb of chip ram.

COLOUR CYCLING: Is a process by which the colour registers' values are altered, creating large scale on-screen colour changes with a minimum of effort. Often used for simple animation effects.

COLOUR REGISTER: Amiga colours are produced by a system of registers. These are normally 12 bits in size, meaning they can store one of 4096 colours. On 24-bit graphics systems, they are, surprisingly 24 bits in size, giving a choice from 16.7 million colours. For a given bitmap of, say, four bitplanes, the binary digits for the same pixel in each overlayed bitplane are joined together to produce a binary number (in this case between 0 and 15). The resulting number determines which colour register is used to supply that pixel's colour. So 16 colour registers are needed for a screen with four bitplanes.

FLICKERFIXER: A card that plugs into the A2000's video slot and removes the flicker from the Amiga's interlace mode and the visible scan lines in the non-interlace mode.

GENLOCK: A way of slaving one video source (eg Amiga) to another (eg video tape) in order to synchronise their signals to allow stable wipes, mixes and other effects including overlay between the two sources.

IFF: Interchange File Format is a means by which data from different graphics or sound sampling programs are saved in a compatible way. It allows data to be exchanged between programs very easily and avoids the situation on, say, the PC where various graphics packages each save data in incompatible formats.

INTERLACE: Interlace is a method used to double the apparent vertical resolution of the monitor by alternately refreshing the screen at a slight vertical offset, thus squeezing an extra line between each of the lines of a non-interlaced screen.

PIXEL: A picture element - one of the thousands of tiny rectangles that make up a computer screen. A pixel is the smallest addressable area on the screen, so a screen's resolution is measured in terms of number of pixels displayable across by number of pixels down.

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HARLEQUIN

The Harlequin card is the most advanced 24-bit card to be released on to the market. When the card began development, 24-bit was an unfashionable thing to be involved in, but the Amiga Centre Scotland bravely worked on this high-end 32-bit card for ultra high-res graphics. Now the gamble has paid off, as everyone is bringing out 24-bit devices – even Commodore.

Shop shifting by ship

The Harlequin card has been shipping since February and, as well as being a state of the art 24-bit card, features a free copy of *Rastalink* (aka *Imagelink*) software. The program now has a direct Harlequin interface for displaying any of a dozen 24-bit formats, such as *DigiView*, *Sculpt 3D*, TIFF, GIF and Targa. The software also supports ARexx, so programs that support this language can transmit information to the board directly.

Direct output from *Sculpt* is also possible, so you can send images directly to the board from the program without having to convert them afterwards.

ASDG's *Art Department Professional* also has been tested although, at time of writing, the program had only been tested with a beta test version of the software.

A full programming interface is also supplied, with an Amiga library and device driver supplied on disk. (The use of the device driver is the preferred method as ACS sees this as the way forward, but both methods are supplied for your convenience.)

At present there are a lot of programs that are going to support the board directly, with *Real 3D* and Simpatica being the only two to be fully tested at the moment. Others include *TV Paint* by Techsoft – a French 24-bit paint program – and *Paintmaster* by PRM – a German package of a similar type.

NEWTEK

The NewTek Video Toaster has been making waves in the USA for some time now (see Morton A Kevelson's New York Amiga World Expo report on p8 of *Amiga Shopper*, issue 2). The card slots into your Amiga 1500/2000/3000 and gives access to some very high-end video/24-bit graphic effects. The machine comes with a 3D renderer, titling software and a range of digital video effects which, if the examples we see are to be believed, is the best thing since ... well, sliced toast I suppose.

In fact the Toaster is so impressive, it looks to be doing the same thing for the Amiga that the Laserwriter and DTP software did for the Apple Mac in the mid 1980s. Apple used an Amiga 2500 (a US only 020 version of the 2000) and a Toaster to do a video graphics display at one of its developer conferences. And Todd Rungren, record producer and musician, has produced his new music video on a Toaster, despite being a confirmed Apple Mac fan. Actually to say 'a' Toaster is a slight misnomer. He actually has ten Amiga 2500s, with a Toaster and 300Mb hard disk drives in each, at a cost of $65,000. (Cough) The resultant 10Gbs of information ended up as 7,200 frames of computer animation that Todd (being a veteran do-it-yourself-er) rendered up himself, taking months to do it. The resultant vid can be seen on the NewTek Toaster demo video, but once again you have to have access to NTSC video equipment to view it. But why not look out for the video to *Change Myself* on the America's Top 10 show on late night ITV? I'm sure Casey Kasem would approve ... (All things being equal I'll have some exclusive shots from the video in next month's column)

Over the last few months you will have seen adverts saying that a PAL Video Toaster will be available in the next few months. Well, I've been on the blower to NewTek's PR dept in Kansas and they say that the Toaster is at least a year down the road. What this means in real terms is that it could be as little as six months, possibly as much as a year and a half, but one thing is clear. As you can see for yourself, none of these dates are soon.

The reason for the delay is that originally NewTek was going to make the Toaster a US-only product. But being canny, as only the producer of *DigiView* and *DigiPaint* can be, it cottoned on to how vast the new European market is going to be. But converting the Toaster from NTSC to PAL is not as simple as changing the software. All the driver software is built in to the Toaster Card itself in ROMs, so converting the software to drive the Toaster is a hardware problem, and these things take longer to fettle. But rest assured, NewTek has promised to call me directly the new machine becomes available, so I'll be one of the first to pass the news on to you.

BLITS & BOBS

Talking about animation, did you enjoy the recent gas central heating adverts ("easily turn off and onable") or the Access ads with the singing lobster and telephone ("does you does or does you don't")? The excellent animation work in these ads was done by Nick Park, the guy who won the Oscar this year for Best Animation with his short animated film Creature Comforts. *Well a compilation video of the Studio's best work is now available on the British Film Institute label, including the Oscar winning cartoon, and some of the company's best advertising work. Titled* Aardman Animations Volume 1 *(cat no CR031), it features 37 minutes of brilliant innovative animation and costs £12.99. See your local video stockist, or order direct from the BFI on ☎ 071-225 1444.*

EUROPE? WOSSAT?

The DCTV card by Digital Creations, unlike the HAM-E, is not PAL compatible. DCTV gives you enhanced display in a 24-bit style, and generates a composite video signal that you can use for animation or still images. The signal is pure NTSC, and Digital Creations has "no plans to make the unit available in an PAL configuration". At least not right away, as we'll find out in a second. But this question leads me to a rant about US hardware firms.

Rant Mode On

Although DC is by no means the only company to show no outward interest in the UK market, it is an example of an annoying trend in third-party hardware makers in the US. This disinterest in the UK/Euro market is something I've found very disturbing in the last few months, as time and time again I find myself coming up against a blank where UK versions of certain items are concerned.

There are some firms, NewTek is a good example, which are waiting to see how their products do in the US before working on fully PAL-compatible versions (See Video Toaster). But at least I would have said that NewTek is making a show of caring about the enormous growth of the UK Amiga market. By stark contrast, calling up DC gives the impression of it not caring about the UK market at all, which I find hard to believe in this day and age.

Commodore has a 7.1 per cent share of the world computer market, a sizable proportion of which is based in the UK, and a large chunk of that is Amiga based. (To put this in proportion, PC giant IBM, for example, has an 11.9 per cent market share worldwide.) There are over 2,000,000 Amigas in the world market, of which 560,000 are in the UK, which isn't an inconsiderable market for a peripheral costing £300-400. It's lamentable that some US companies fail to notice that, apart from anything else (like the firm's profile in the market), they stand to miss out on a very large amount of money if they ignore Europe. (Rant Mode Off)

But Digital Creations may be weakening to the European market. Although a PAL version of the DCTV is still some way off, Amiga distributor HB Marketing has been applying friendly pressure to DC for months now, and may become the distributor of the unit in the UK should a PAL version become available. According to a reliable source, this could be in September, but it's obvious that by that time the HAM-E will have been around for four months. With the nearest competitor having a four-month head start in the marketplace, the DCTV will have to be of substantially better quality to gain much ground at that stage. AS

SHOPPING LIST

Colorburst .... **£TBA**
DCTV .... **£TBA**
(DCTV not available in PAL yet)
To be distributed in the UK by:
HB Marketing
Unit 3,
Poyle 14, Colnbrook,
Berks, SL3 0DX
☎ 0753 680363

HAM-E **£299**
Distributed in the UK by:
Checkmate Digital
80 Mildmay Park Road,
London, N1 4PR
☎ 071 923 0658

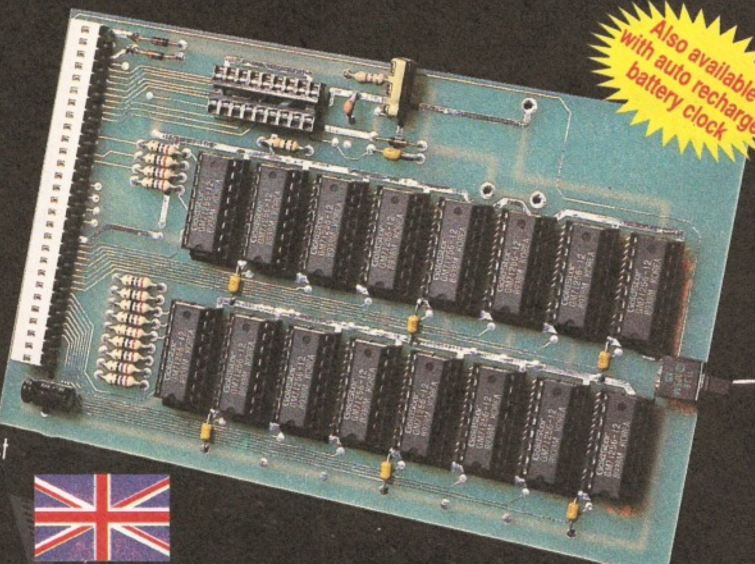
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Edinburgh, EH1 3RN
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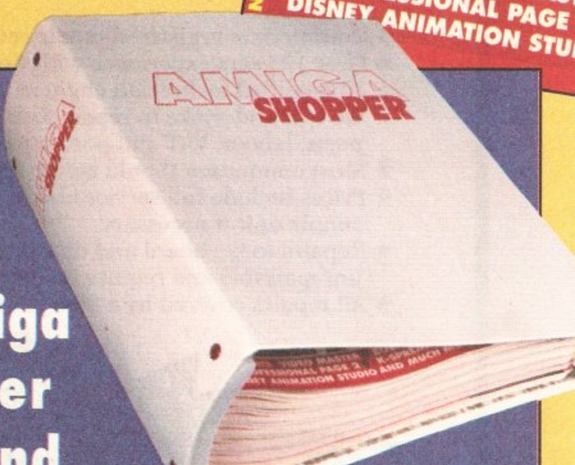
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DISK 2

WORDWORTH This brand new word processor from Digita International is described by them as 'a writer's dream' and you'll be able to see if it is for yourself with this demo. You will also get a voucher enabling you to buy *Wordworth* for just £99.95 – that's a saving of £30 on its normal price!

SEQUENCER ONE In issue 2 of *Amiga Shopper* we said of this new sequencing program from Gajits Music Software "it has to be *the* budget priced sequencing software for the Amiga." Why not find out for yourself and take advantage of our special voucher offer to obtain a free disk of exciting new samples for use with *Sequencer One*?

3D CONSTRUCTION KIT If you've ever wanted to create your own 3-dimensional worlds then now is your chance with Domark/Incentive's brand new game creation program. It allows you to use Incentive's famous Freescape programming system to create your own stunning 3D games – without a scrap of programming knowledge. Don't be fooled though, this is a utility that will great programming power at your fingertips.

NB If you wish, you can purchase demo disks 1 and 2 separately for just £1.75 each. Use the order form below and please make sure you indicate which demo disk or disks you wish to receive.

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Draft dodges

Peter Jones traces the origins of CAD and depicts Ditek's brand new Amiga-based DynaCADD

"DynaCADD is one of an increasing number of CAD packages for the Amiga. It promises much, but does it deliver? I'm here to find out."
Peter Jones

BEGINNERS START HERE

Computer Aided Design is the generic name for high-precision, sophisticated technical drawing software applications. It has become very important in the architectural and engineering fields, in which it was developed (initially on mainframe computers) to aid engineers and architects in the design of everything from bridges to buildings; cars to cathedrals; aircraft to auditoriums.

CAD also encompasses, among many other things, assisting the design of page layouts for books, newspapers and magazines which, in the personal computer world, has been placed under the heading 'Desktop Publishing' (DTP).

CAD replaces the traditional drawing board of the designer and presents a more flexible system that removes a lot of the donkey work from the labour of designing. Calculating the size of an irregular area, for example, would require much work with a slide rule, but when entered into a CAD application with a mouse or graphics tablet, the computer can calculate a value almost immediately.

CAD is often combined with CAE, or Computer Aided Engineering, by which the computer is used as a tool to help the engineer develop and refine his design, formulate instructions to control the production process and quantify the materials necessary for the product's manufacture.

DynaCADD, from the Canadian company Ditek International is, as its name suggests, a CAD (Computer Aided Design) application. Ditek has added another D and refer to it as a Computer Aided Design and Drafting package. The program is new for the Amiga, but already enjoys a certain success in the MSDOS world. It is a comprehensive and sophisticated two and three-dimensional technical drawing application which has been adapted quite well to take advantage of the special facilities offered by the Amiga, but nonetheless still bears some traces of its non-Amiga origin.

Ditek recommends a minimum 2Mb of RAM, a hard disk drive and 68020 or 68030 processor, plus a 68881 or 68882 maths co-processor, although the company says that the program will run on a standard machine with the 68000 CPU. *DynaCADD* also needs a minimum resolution of 640 x 400 pixels, so a de-interlacing card, such as the Flicker Fixer from Microway or Commodore's A2320 Enhancer board, and a multi-scan monitor are necessary, unless you are fortunate (and rich) enough to own an A3000.

CAD and binder

DynaCADD is packaged in a strong, plastic-clad box and consists of two disks, a 600-page manual in a roughly A5-sized three-ring binder, and a dongle.

For those of you with no experience of dongles, I should explain that it is a copyright protection device in the form of a small (about 3cm by 3cm) block with a nine-pin connector on one side. This plugs into the joystick port. The program checks for its presence and will not run without it. At its simplest it just checks for a voltage, but the dongle can contain more sophisticated copy protection circuitry. The advantage is that the legal owner is free to make as many back-up copies as he (or she) likes, which answers the most widely voiced criticism of programs with software protection. The disadvantages are first that a dongle will not necessarily work with all revisions of the Amiga motherboard, and second, a dongle effectively nullifies one of the features of the Amiga that sets it apart from the rest – multitasking. If you have two or more applications requiring a dongle, and only one joystick port to play with, you end up with insufficient space for all of your dongles to dally.

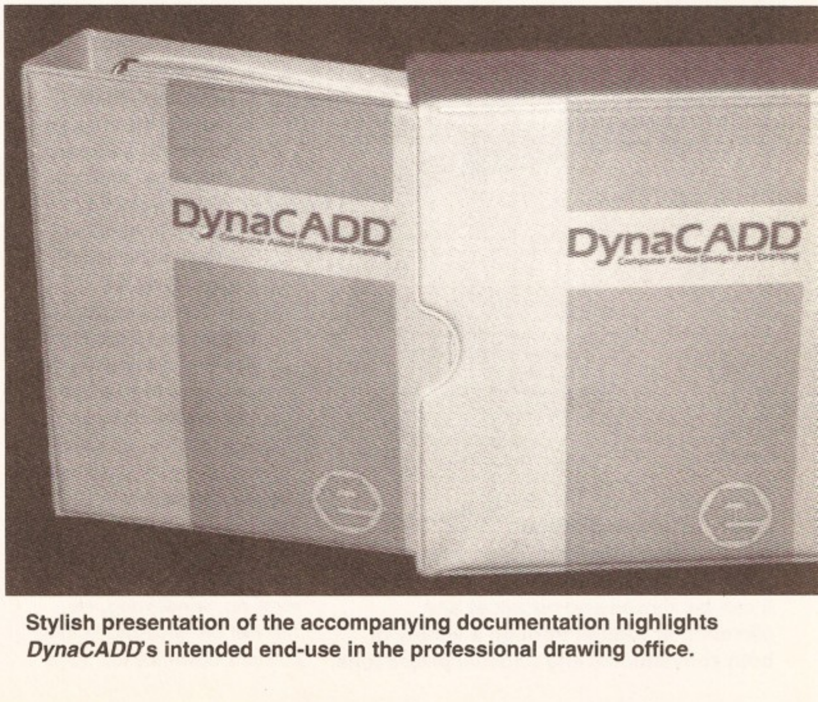
> **"Everything possible has been done on-screen to enable even impatient people like me to learn how to use the program smoothly."**

To install *DynaCADD* on to a hard disk, the two floppy disks are inserted (both at once if you have two drives) and a double click on the icon marked INSTALL does the business. You are asked to type in your name and address (this information is placed in the window displayed when information is requested about the program) and to specify the identity of the hard drive on which the program is to be placed. The utility then transfers all the necessary files to a newly created directory on the hard disk. The manual states that the install program will detect the presence of a 68020/30 and associated maths co-processors and place the appropriate version of the program on the hard disk, but a README file on the program disk and a sticker on the outside of the package both said the version with which I was provided was for 68020/30 CPUs only.

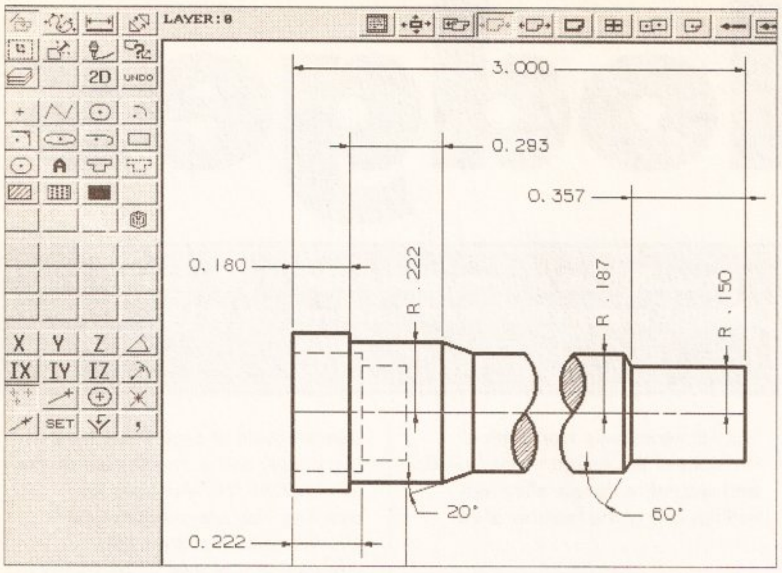
First draft

Double-clicking on the *DynaCADD* icon brings up a screen inviting you to enter information about the drawing's size and scale. Its has the look of Workbench 2 about it, using battleship grey as the principal colour and employing icons and buttons that appear to be embossed.

continued on page 66



Stylish presentation of the accompanying documentation highlights *DynaCADD*'s intended end-use in the professional drawing office.



***DynaCADD*'s zoom function enables close scrutiny of entities on-screen, illustrating the high tolerances expected in component engineering.**

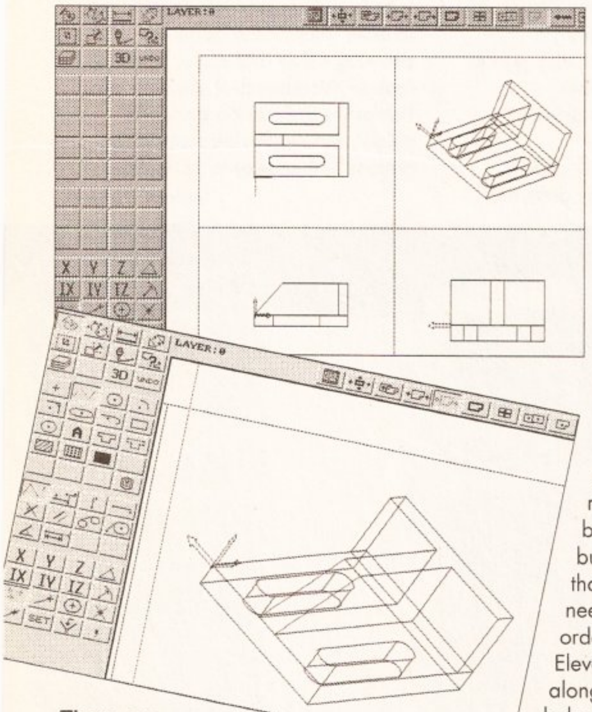
continued from page 65

It is mandatory to specify at least a part and a drawing in the central dialogue box entitled Current Drawing Parameters before clicking on the OK button. Other parameters deal with the units to be used: inches, feet, yards, miles, millimetres, centimetres, metres or kilometres; the scale to be used; and the drawing size. There is a choice of A-E (English standard) AA-AE (architectural) or A0-A5 (DIN).

When activating a part, another dialogue box is displayed listing the names of existing files, and this is where a certain irritating inconsistency creeps in. If an existing file is selected, the name will pop up in the space marked File Name and a click on the OK button will cause the program to accept the file. However, if you wish to create a new file, this must be typed in the File Name space, but will not be recognised if the OK button is pressed; only if the RETURN key on the keyboard is actioned.

Boxing clever

On the second and subsequent loadings of *DynaCADD* you are first presented with a box offering the option of an AUTO Load. If this is accepted, the last file saved in the previous session will be automatically loaded. Once the selections have been made, and assuming an existing file has been chosen, the parameter dialogue box disappears and the drawing is displayed on the page. This occupies about 80 per cent of the page, starting almost from the bottom right of the screen, with the rest reserved for the bewildering number of buttons (there are more than 300 altogether) that need to be pressed in order to draw things. Eleven of these are found along the top of the page, below the menu bar, and provide the viewing controls: zooming in, zooming out, centering, scrolling, windowing, etc. The rest are grouped in four columns down the left hand side of the screen. Initially, only the first three of the 15 rows of buttons have symbols on them, but pressing on one of these activates subsidiary blocks. For instance, when INSERT is selected another 16 buttons are activated. Click on LINE from among these and a further 27 spring to life. Choose VERTICAL, then LINLEN, then LOC. The first time I tried it, I was in despair. Which symbol was INSERT and which was VERTICAL? The symbols are small and not easy to distinguish. POLYGON and CIRCLE are identical.



There are plenty of powerful image manipulation functions. Once a 3D entity has been created within the program, it can be viewed and output at any elevation or rotated through a variety of both conventional and unusual projections.

Happily, my predicament had been anticipated by *DynaCADD*'s creators. A quick perusal of the manual (come on, hands up. How many of you look at the manual, apart from the installation instructions, before trying a program?) reveals that on one of the pull-down menus there is an option to turn on the HELP feature. This is excellently done. By moving the cursor over a button, its label (INSERT, LINE, etc) is displayed just above the drawing area, and is accompanied by a few words on how it should be used, which appear below the drawing area. Add to this a comprehensive, context sensitive on-screen manual available at a press of the HELP button and everything possible is done on the screen to enable even impatient, irrational people like me to learn how to use the program smoothly.

There are two tutorials you are encouraged to follow: one for 2D and the other for 3D. These are reasonably easy to follow, but marred slightly by instructions left over from MSDOS. One quickly learns that any geometric object, be it a line, polygon, square, circle, or whatever, is an Entity; that a Part is a three-dimensional database that defines the basic elements (an entity or group of entities) of a drawing; and that a Drawing is the actual page or sheet of paper on which one is working, the size and scale of which is defined in the Current Drawing Parameters dialogue box.

Entities arranged

Using the hierarchical button system, one learns how to place entities on the paper. These can be manipulated endlessly: turned round, duplicated, locked into any of the three axes – X, Y, Z – aligned with other entities, and so on. Entities can be drawn in any of 16 colours, with a choice of three different thicknesses of line, 12 pre-defined styles (continuous, dashed, etc) or a style defined by the user. For complex drawing, a pull-down menu offers up to 16 separate, user-definable views (referred to as images) of an object.

One of the powerful features of *DynaCADD* is that a drawing can be built up in layers, rather like those educational books in which drawings of car engines are placed on several pages of transparent plastic and can be turned over to reveal the various parts. *DynaCADD* permits 256 such layers. Each layer can be locked or made invisible, facilitating the design of complicated structures.

File facts

File transfer to and from *DynaCADD* and most other CAD programs is possible through the use of the popular DXF standard. For file transfer between different versions of *DynaCADD* and between its implementation on different machines, the program has its own proprietary standard, DEF (*DynaCADD* Exchange Format).

Once a drawing has been completed, the program allows for various dimensions to be added automatically to the page. Any entity

JARGON BUSTING

BIT-MAPPED FONTS: Fonts that are mapped to the screen pixels and thus are dependent on screen resolution for their smoothness and clarity. *DeLuxe Paint* and many other programs use bit-mapped fonts. Try zooming in (or out) on a bit-mapped character and notice how quickly the original shape disappears.

CONTROL POINT: A location on a curve or at the ends of font vectors, which defines the location of curves and lines.

ENTITY: The basic design element in *DynaCADD*. A single base geometric figure, combined with others to create larger, more complex figures.

KERNING: A method of reducing the space between printed or displayed characters to bring them together for a more 'natural' appearance and to reduce the white space between them.

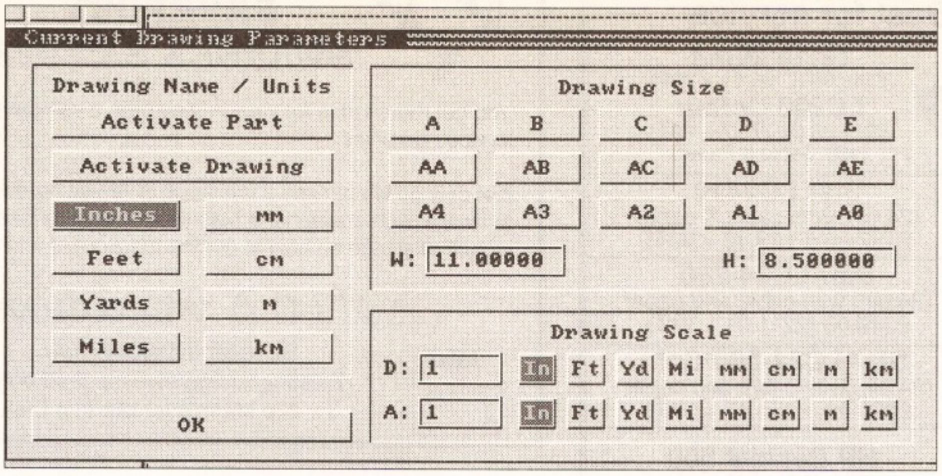
PART: Three-dimensional database created in *DynaCADD*, represented on the screen by a particular object.

VECTOR FONTS: Fonts in which the lines of the characters are defined by a collection of control points. This means that they retain their shape no matter how much they are shrunk or enlarged.

VIEW: Rectangular window used to observe three-dimensional entities at a specified scale and rotation. *DynaCADD* allows up to four simultaneous views.

X Y Z AXES: Three-dimensional system of coordinates. The Z axis runs perpendicular to the X Y axes and defines 'depth' of an object.

ZOOM: Increasing or decreasing the magnification of the drawing area or part of a drawing.



On entering the program, a Workbench 2-style screen invites the user to set up parameters of the intended drawing. This procedure can be circumvented after the first loading of the program as a box offering AUTO load appears and, if instructed, will load the last drawing saved in the previous session.

can be selected, instructions given as to how the dimension should be shown, where the dimension label should be placed, at what angle, what type of lines or symbols should be used to indicate the range of the dimension, and then the program automatically calculates the distance involved and places it appropriately on the page.

Text handling is well catered for, with a total of 15 vector fonts provided: five from Ditek, and 10 AGFA Compugraphic fonts. Perhaps mindful of possible memory limitations, only one font is initially available. All 15 can be loaded and placed in the Font Select box, but the procedure is rather cumbersome, since each font must be chosen and loaded individually, which means 40 or so key strokes to load the whole set. I could maybe answer my own criticism by suggesting that the use of 15 different fonts in a DTP layout would be overkill, let alone in CAD.

Text into context

Text is first typed into an Edit box and can then be placed anywhere on the drawing, at any angle. The characters can be equally or proportionally spaced or kerned. The height and width of each character can be set independently, as can the space between characters.

This can be a two-edged weapon: since characters can be any size or shape you want, it is very easy to destroy the carefully designed proportions of a traditional type style. I have a Fleet Street working background and prefer the option of referring to the character sizes by points. It is possible for the user to create his or her own vectored fonts using a Font Editor but, curiously, since it is covered in the manual, it does not come with the program. It is sent, free of charge, upon receipt of the product information card by Ditek International. MAKEPLOT, a utility to write customised plotter drivers, also accompanies it.

Three choices are offered for turning the image on the screen into hard copy: A plotter, a dot-matrix printer, or a postscript printer. Pressing on the Config button in the printing dialogue box enables selection from any of some 21 printer drivers. There was no driver for the Hewlett Packard Desket 500 but the LaserJet 150dpi driver worked perfectly. Annoyingly, and despite the fact that Ditek has gone to great pains in the rest of the program to provide metric units and DIN paper sizes, in the printer parameter box it is only possible to select the sheet size for the best-fit printing option in increments of one inch. Since I use DIN A4 paper, which is just under twelve inches in length, I was forced to drop down to the 11-inch sheet size to make sure the whole drawing would fit on the paper. This failing also applied to the postscript printer parameters. However, the plotter parameter box properly allowed selection of the page size in all three systems allowed by the program.

BLITS & BOBS

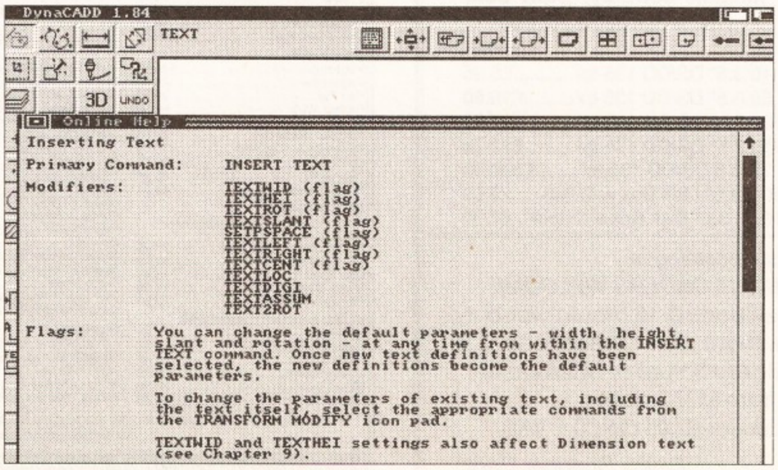
These days computers play a major role in computer design; a role that English mathematician, Charles Babbage would surely have benefited from when he designed and partially built the first computer in c1835 – a mechanical calculating machine.

Success by design

Ditek International has broadly succeeded in its aim of providing a high-quality, professional CAD application. However, I am of the opinion that more could have been and should have been done to make *DynaCADD* look and perform like a product developed specifically for use with the Amiga.

A piece of paper included with the manual states that all of the screen shots, figures and dialogue boxes shown in the manual are actually from the MS-DOS version of *DynaCADD* and that because of this they will appear slightly different from what is displayed on the Amiga's monitor.

In fact, the MSDOS-ness extends to the text somewhat as well. Ditek, however, cannot expect to shrug off the responsibility of providing an authentic Amiga product by merely printing a disclaimer of this nature. For the high price the Amiga user is expected to pay for this product, he or she merits the software equivalent of a tailor-made suit, not an IBM hand-me-down. AS



Plenty of help is at hand from the informative 600-page manual and on-screen, including detailed tutorials on both 2D and 3D image drafting,

Shopping List

DynaCADD ....£650 (plus VAT)
by Ditek International
Unit 3,
John Street,
Ontario,
Canada
☎ 0101 416 479 1880

Ditek represented in the UK by:
Expressworks Ltd
75 Heath Lane,
Upper Hale,
Farnham,
Surrey
GU9 0PX
☎ 0252 726255
Fax: 0252 727125

A PC version of *DynaCADD* is also available at the same price of £650 (plus VAT).

Checkout

Ease of use............15/20
The hierarchical command buttons take some getting used to, even with the comprehensive help facilities available. Also, this command/sub-command/sub-sub-command approach does slow down the rate of progress in creating a drawing.

Speed 9/10
Very good. I was never conscious of drumming my fingers on the table waiting for something to finish.

Output 9/10
This mark is based on the hard copy produced on the Hewlett Packard DeskJet 500, which was extremely good.

Text handling...........8/10
Comprehensive editing and handling functions. It would be nice to be able to refer to the characters by point size.

Tools 18/20
The program has so many functions to aid the professional that it is difficult to fault.

Documentation.......14/20
A well-written, nicely laid out, 600-page manual with two reasonably easy-to-follow tutorials. However, it suffers from having been written initially for the MSDOS version and then Amiga-ised.

Value for money 7/10
At £650 (plus VAT) it is only going to be bought by companies or professional freelances, and in that market it is not overpriced for what it offers.

AMIGA SHOPPER 80/100

DynaCADD is a good, professionally designed CAD application for professional users, but suffers slightly in showing its MSDOS origins.

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"This is the first in a major C programming series. There has never been anything like it in any UK Amiga magazine before. It is not for beginners, as something like this cannot be written for beginners; that would need an entire book. This is not a cop out; this is real life.

The subject of the article, *ADraw*, will basically be a structured drawing tool and will be of great practical use. As technical as it is, Sam Littlewood and I both feel it will be so good that it will inspire those of you still thinking about C to actually go out and do something about it.

A working knowledge of C is assumed – that is, you are expected to understand terms like 'union' and 'linked list' and so on.

I believe this article will become a reference piece not only for hobbyist programmers, but also for commercial developers."

Jeff Walker



Writing it right

Sam Littlewood presents the first in an exciting series of articles on how to build an Amiga application in C

An Amiga, a C compiler and the ability to print 'hello world' are only a few of the things needed to construct a program that looks like it should – windows, icons, menus, and everything else.

The missing link to escaping from something that could be running on a dumb terminal, for all the graphics it uses, is how to get at all the pretty bits from within C. Having managed that, you then need all the not-so-pretty bits that glue together and support the pretty bits.

This series of articles will show you how to build a windowed, menued and iconed application from scratch, and takes detours into bits of C and the Amiga's operating system as and when necessary.

The ADraw program

ADraw, the program we'll be building up during these articles, is a drawing package. This is somewhat different to a paint package – instead of dealing with pixels, it deals with higher level items such as lines, circles, boxes and text.

Although something like *DPaint* provides ways of setting pixels in the picture along the lines given above, once the operation has been completed, that item is forgotten – it is just so many pixels. A drawing program *does* remember this information. A particular line can be removed, or a box shrunk a bit. Objects in the picture can be dragged, sized and their depth arranged like windows.

The disadvantages of a drawing package show when control of individual pixels is required – manipulating a computer rendition of a Turner picture for example. *DPaint*, or similar programs, will take pixel manipulation in their stride, subject to your patience and imagination, whereas a drawing package will be completely unhelpful.

A reverse situation occurs when a simple diagram is needed. It would be reasonably easy to create such a thing using *DPaint* as long as it was not too complicated. Printing it, however, is a different matter. *DPaint* can do no better than dump the fairly low-resolution screen picture to a potentially very high-resolution printer, whereas a drawing package can redraw all the elements of the picture at an appropriate resolution.

From all this, it sounds like a combination of both a drawing and painting program is the best approach. Well, yes, but the list of bridges to be crossed extends to an unfeasible length.

Having just outlined a wonder-tool, I will tone this down a bit by saying that *ADraw* will not be in any way 'wonder' to start with – 'simple, but of excellent breeding' would be a better description.

The initial goal is to get a solid foundation of all the Amiga-related stuff needed for a good program, providing a base to which loads of features can be added later. *ADraw* is going to revolve around the pictures that users create. I will call these 'projects'. Other words, such as 'file' or 'picture', are bound to cause some confusion later, so for now let's keep the word 'project', although a project will indeed be stored in a single file and it will indeed represent a picture.

Second draw

A feature of *ADraw* that makes things a little more complicated is its ability to handle multiple projects – two different pictures can be loaded up and edited at once using the same copy of the program. This is something that has to be worked in at a fairly low level and is eminently useful for getting real work done.

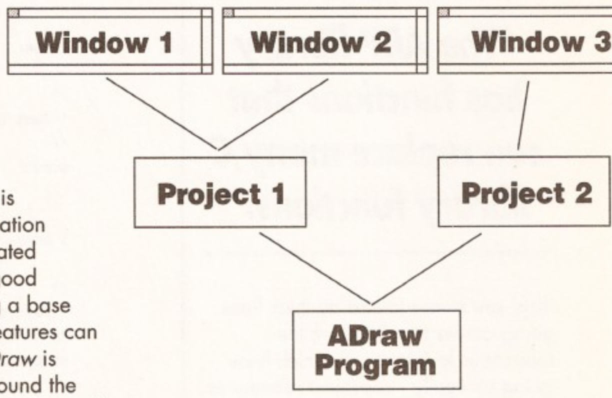
So how do windows fit into this? Well, although it is tempting to think of each project as having its own Intuition window, this is not strictly the case. As with *ADraw*'s ability to handle multiple projects being a good feature for later use, the ability to have multiple windows in the same project is also something that must be considered early and will make the program far more flexible later.

A diagram of this setup is shown below. The program, at the bottom of the diagram, currently knows about two projects and three windows. Of those windows, the first two are working on bits of Project 1, the third is the only window on to Project 2.

It is often a temptation to make each new program open its own screen. The advantages are that you can force the layout to your exact style and you don't have to worry unduly about other programs doing unexpected things with their windows. *ADraw* has no need to force its own screen format and is intended to be an example of how to make programs cope with the Amiga's environment, so it does not need its own screen. If, however, you

continued on page 70

MULTIPLE WINDOWS



More than one window can open on to a specific project, which makes for program flexibility.

COMPILERS

The application described in these articles, *ADraw*, has been developed using *SAS C* 5.10. The only features particular to this compiler that have ben exploited are the 'proto/...' include files, giving prototypes and fast calls for all the Amiga library functions.

With *Aztec C*, the equivalent information lives in a file called functions.h which can be included in place of the 'proto/...' files.

There are several freely re-distributable compilers around for the Amiga. This application has been compiled with GCC – the Amiga port of the GNU C compiler. However, there is a drawback to using these compilers, in that the rather necessary Commodore header must be acquired separately. They are available for $20 from CATS (Commodore Amiga Technical Support) – see the shopping list on page 72.

continued from page 69

really like it that way, it will open a screen and keep its windows there rather than on the Workbench.

If *ADraw* does open its own screen, then it tries to make it the same size as the Workbench via the Intuition function GetScreenData(). This is to cope with those who are brave enough or lucky enough to use overscanned and interlaced screens and would otherwise get a working area somewhat smaller and at a lower resolution than possible.

Inside projects

Each project has some accumulation of data that represents the picture. These are the items, lines, boxes and so on, as mentioned earlier. A further highly desirable feature of a drawing package is the facility to group items into one unit – for example, a box, some text labels within it, and some annotating lines can, once finished, be made into a single object to be used in constructing a more complicated picture.

Moving one step towards the actual implementation of a project, a project is a list of elements and these elements can either be primitives or groups. A group is a further list of elements. The diagram above shows a small example of this. The simple picture is made up of a line, two groups, a box and a circle. Each of the groups is a box and a string. The

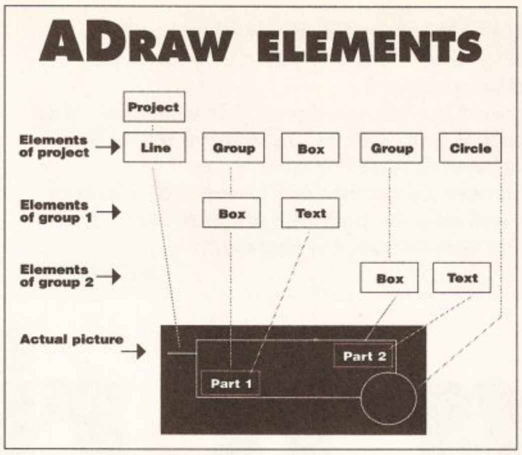
> ***"The ARP library has functions that can replace many C library functions."***

'lists' are boxes joined by thick lines going across the diagram; the references to lists are the thick lines going vertically – a project references a list of elements, and each group references the list of its elements.

Each element of the project is going to be a separate chunk of memory – in C, a structure.

Inherited memory

These chunks of memory will be allocated as needed from the Amiga's operating system and given back when no longer needed. Each of these chunks must be able to link into lists of other chunks. The simplest method would be a singly linked list – each element has a pointer to the next element on the list. The last element has a NULL pointer, actually zero. NULL is a #define from exec/types.h and is the one value that is guaranteed not to be a valid



Each project in *ADraw* consists of a list of elements that it references and each group references its own list of elements.

pointer; as such it is recognisable as the end of the list. The things that need references to lists (projects and groups) would have pointers to the first element in their sublists. Listing one, below left, shows the cut-down structures for this particular proposal.

The element structure has a variable describing what sort of element this is (its type) and depending on that, the remainder of the structure is one of several possibilities available. Each member of the union called 'typedata' occupies the same bit of the element memory chunk. A line uses this for a structure containing the start and end points – a group would use the corresponding bit of its own chunk as the position and pointer to further elements.

Create elements

Listing two, below right, shows how a list of elements can be created by using the OS call to AllocMem(). The function creates a list of five lines that could be used, for example, to be added to a project. Something along these lines:

```
MyProject->elements =
MakeFiveLines()
```

Processing a list of elements, such as

LISTING 1 – POINTERS

```
struct Element {
   /*
   * The next along in the current list
   */
   struct Element *next;
   /*
   * What type of node is this
   */
   int type;

   /*
   * The rest of the structure is particular to the type
   */
   union {
          /*
          * Part of union valid if type is LINE
          */
          struct {
                  int start_x,start_y;
                  int end_x,end_y;
          }line;

          /*
          * Part of union valid if type is BOX
          */
          struct {
                  int topleft_x,topleft_y;
                  int bottomright_x,bottomright_y;
          } box;

          /*
          * Part of union valid if type is GROUP
          */
          struct {
                  int x,y;
                  struct Element *elements;
          } group;
   } typedata;
};

/*
 * Valid types for Element.type
 */
#define LINE    1
#define BOX     2
#define GROUP   3

struct Project {
   /*
   * Pointer to first element of project
   */
   struct Element *elements;
   /*
   * Additional project data
   */
   ...
};
```

LISTING 2 – ALLOCMEM()

```
#include <exec/types.h>
#include <exec/memory.h>
      ...
struct Element *MakeFiveLines(void)
{
   /*
    * A pointer to keep track of the first thing in the list
   */
    struct Element *head;

   /*
   * A pointer which will be used for each new element
   */
   struct Element *current;

   /*
   * List starts  out empty
   */
   head = NULL;

   /*
   * Create a list of 5 lines
   */
   for(i=0; i<5; i++) {
          /*
          * Create a new element that is cleared to zeros
          */
          current=AllocMem(sizeof(struct Element), MEMF_CLEAR);
          /*
          * Fill in the new structure
          */
          current->type = LINE;
          current->typedata.line.start_x = 10;
          current->typedata.line.start_y = i*10;
          current->typedata.line.end_x = 100;
          current->typedata.line.end_y = i*10;
          /*
          * Hook old list to back of this element
          */
          current->next = head;
          /*
          * List now start with the new element
          */
          head=current;
   }

   /*
   * 'head' now references the first in a list of 5 elements
   * pass back to caller
   */

   return head;
}
```

LISTING 3 - ELEMENT LIST PROCESSING

```
void DrawElementList(struct RastPort *rastport,
        struct Element *head,
        int at_x, int at_y)
{
  /*
  * A pointer used to reference the current element in
  * the list
  */
  struct Element *current;

  /*
  * Step through list until NULL is reached
  */
  for(current=head; current != NULL; current = current->next) {
     /*
     * Draw the current element
     */
     switch(curent->type) {
     case LINE:
         Move(rastport,
          at_x + current->typedata.line.start_x,
          at_y + current->typedata.line.start_y);

         Draw(rastport,
          at_x + current->typedata.line.end_x,
          at_y + current->typedata.line.end_y);

         break;
     case BOX:
         /*
         * Moves and draws around edge of box
         */
         ...

         break;
     case GROUP:
         /*
         * Got a group, call a new instance of this
         * function, but at a new position
         */
         DrawElementList(rastport,
          current->typedata.group.elements
          current->typedata.group.x,
          current->typedata.group.y);
         break;
     }
  }
}
```

drawing, is simple – a pointer is walked down the list until NULL is reached. Listing three, above, shows the technique.

The function DrawElementList() is recursive – when it encounters a group in a list, it calls a new instance of itself. Each call to a function creates a new copy of the arguments and local variables that are private to that particular function call. When DrawElementList() calls itself, the next level down will have its own copy of 'current' that it walks along the sublist. Once it has finished with the sublist, control returns to the first DrawElementList(), whose copy of 'current' is untouched, and continues to walk along the top level list.

Intuitive area

The variable 'rastport' is a reference to an Intuition structure that describes an area of screen that can be drawn into. All graphics functions take one of these references, such asMove() and Draw() for example. If an Intuition window has been opened, then a reference to the window's screen area is available as 'window->RPort' so, using MakeFiveLines() to create an element list...

```
DrawElementList(window->RPort,
MakeFiveLines(), 0, 0);
```

Creating and processing singly linked lists is no problem, as the above examples have shown. Their limitations come about when trying to do more complicated manipulations. It is easy to add items to the front of a singly linked list, as in MakeFiveLines(), and it's also possible to walk along the list from front to back. Operations such as adding an element in the middle of a list or walking back-to-front are rather more difficult; there simply is not enough information to do it very easily.

The extra information required is an additional pointer in each element to the previous one in the list, making a doubly linked list. In the same way that a singly linked list has a NULL at the end, the links going the other way have a NULL at the start. In the examples above an additional member 'prev' would appear in the element structure:

```
struct Element {
   /*
   * The neighbours
   * forward and
   * backward in
   * the current list
   */
   struct Element *next;
   struct Element *prev;
   ...
```

With this addition, inserting and removing elements from a list becomes potentially much more easy. Listing four, above right, shows how you would add an element 'new' into a doubly linked list following an element ('here') in the list.

To remove a function from a list is similar and an example is shown in listing five, left. There is one slight problem with these functions: what to do at the ends of the list. The 'next' and 'prev' pointers that are assumed to be valid suddenly become NULL – a value that, if used as a pointer as in 'here->next->prev' will make the machine shuffle off into hedgehog mode with a red flashing box for prickles.

A way around this problem is to redefine what constitutes the end of the list. Instead of being a NULL pointer, the start and end of the list are marked by special nodes that are always there – the head and tail nodes. They should never be removed, and nothing should ever be inserted on their far side.

How are these special nodes identified? Their outward facing pointer is NULL. In effect, two buffer nodes have been added to the ends of list. The special nodes at each end of the list do not need to be full elements; all that is needed of them is their 'next' and 'prev' pointers, reducing the memory required.

These ideas are not new, and it is singularly convenient that exec.library, the core of the Amiga OS, has a complete set of types and

continued on page 72

LISTING 4 - ADD 'NEW' ELEMEN

```
void AddElement(struct Element *here, struct Element *new)
{
   /*
   * What was after 'here' is now after 'new'
   */
   new->next = here->next;
   /*
   * 'here' is before 'new'
   */
   new->prev = here;

   /*
   * 'new follows 'here'
   */
   here->next = new;

   /*
   * The element after 'here' should now reference 'new'
   * as its backward neighbour
   */
   new->next->prev = new;
}
```

LISTING 5 - REMOVE FUNCTION

```
void RemoveElement(struct Element *here)
{
  /*
  * Our backwards neighbour now points over us to our forward
  * neighbour
  */
  here->prev->next = here->next;

  /*
   * Ditto the other way around
  */
  here->next->prev = here->prev;
}
```

LISTING 6 - MINILISTS

```
struct Element {
   /*
   * Hooks this structure into a doubly linked list
   */
   struct MinNode node;

   /*
   * What type of node is this
   */
   int type;

   ... The rest as before except

      /*
      * Part of union valid if type is GROUP
      */
      struct {
           int x,y;
           struct MinList elements;
      } group;
   ...

struct Project {
   struct MinList elements;
   ...
```

LISTING 7 - NULL POINTER

```
WalkElementList(struct MinList *list)
{
   struct MinNode *node;

   /*
   * mlh_Head is the 'next' pointer of the special Head node
   * mln_Succ is the 'next' pointer of a normal node
   */
   for(node = list.mlh_Head; node->mln_Succ != NULL; node
= node->mln_Succ) {
      /*
   * Cast node pointer to being an element and pass to function
      */
      DoElement((struct Element *)node);
}
```

continued from page 71

functions for managing linked lists of exactly this sort. There are two kinds of Exec lists – Lists and MinLists. Lists include such things as names and priorities in each element. MinLists are a special case that provide the base bones of doubly linked lists.

Range for order

ADraw uses MinLists extensively. MinLists are referenced and maintained through a structure called 'MinList'. This contains the special head and tail nodes. Each structure on the list must start with a 'struct MinNode'. If all this is set up, then Exec functions, such as Insert(), Remove(), AddHead() and AddTail() can be brought to bear.

To use MinLists, the changes made to the previous structures are shown in listing six on page 71.

Now that the new definition is in place, there is one major change – when walking either way along one of these lists, the last real element is spotted by the element (shown in listing seven, above left) having a NULL pointer.

The Exec functions work in terms of the Node – the little chunk of data at the start of the element structure, of which MinNode is a reduced case. Once that has been arrived at, it is then cast into a pointer to the real element structure containing all the data that follows.

A similar thing happens when giving the Exec functions references to elements – they must be cast to be Node and List pointers, not MinNode and MinList. Listing eight, below, shows the general idea.

Internals analysed

Having got some idea of how the internals of an *ADraw* project will hang together, is there anything else that these lists could be applied to? Well, yes. *ADraw* will need to maintain a list of projects, and each project will need a list of windows viewing it. The project structure will acquire a MinNode at the front to hook it to a global MinList of projects, as well as its own MinList, to which the windows will be attached.

This series will be running in *Amiga Shopper* for the next four or five months, enabling you to take the complexities of building a major C application at a comfortable pace and giving you the chance to follow up what you learn in these pages with a little background study.

The problem to be addressed in the next article is how to get the windows, gadgets and so on sorted out. Once that is done the application can be constructed. AS

LISTING 8 - NODE AND LIST

```
AddHead((struct List *)thiselement->typedata.group.elements,
   (struct Node *)NewLineElement(0,0,10,10));
```

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ARPing on Support Libraries

For the development of this application I have tried to avoid using additional tools other than those provided with the compiler. There is one big exception however – arp.library.

Design well shARP

This is a well designed support library (freely re-distributable) that provides a wide range of extra functions. It has found its way to the far corners of the universe (well the Amiga one anyway) unlike any other support library. That, along with its quality, makes it hard to forgo.

The ARP library has functions that can replace many of the C library functions. The big advantage with this is that they do not take up space in each application. They are instead shared between all applications, unlike the anonymous kilobytes of code and data that, using the normal C library, will add on to each and every unwitting program.

Of all the ARP functions, the one that makes it completely and utterly irresistible is the file requester. This gives a quick and effective way of doing a standard file selection window with one function call. The *ADraw* program uses this, but in the somewhat unfortunate event of arp.library not being available, it will revert to a simple string requester to get file names.

For somebody using a program that needs arp.library, all they need do is copy it into their LIBS: directory. This one file can be distributed with the application in case the user needs it.

To develop programs that use arp.library, slightly more is needed – the header files and link library that are used to glue the program to the library. These are freely re-distributable, and are available on a Fish Disk.

Under Workbench 2.0 the ARP library has been worked into the standard operating system. This migration, however, is not transparent as bits of it are in different libraries and called different things. An application must explicitly detect 2.0 and switch to the new system.

The details of exactly how *ADraw* uses arp.library will be discussed in this series.

REQuisition a FishDisk

There are many other support libraries around, all available on Fish Disks. For example: req.library provides a file requester with a lot more bells and whistles than ARP, as well as a font requester; iff.library is a set of functions for handling general IFF files; and post.library is a complete postscript interpreter.

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"Programming is an aspiration often confounded by jargon, but I aim to help you master it with minimum gobbledygook."
Jeff Walker

The value of the variable

What is a variable? And after you've declared one, how does Amiga Basic know what it is? Jeff Walker sneaks into Amy's inner sanctum and comes away with a few tasty numbers and addresses

Variables are something every computer programmer uses. So what are they, I hear you ask? Information which you give the Amiga to work on is called data, and when you give the Amiga a piece of data to store in memory, you have to give it a label. The label is called a variable and when you want the Amiga to do something with the data, you would refer to it by its variable name.

The label is called a variable because the data to which it refers can change during the running of the program, hence it is 'variable'. Depending on the particular language you are programming in, you will have various types of variable at your disposal.

In Amiga Basic we have only two types: numeric and string. Numeric variables have four sub-types, and each has its own special purpose. The simplest sub-type is called the 'short integer'.

Utterly pointless

The term 'integer' sounds very grand but it is nothing more than a positive or negative whole number – one that doesn't have a decimal point in it. The number 99 is an integer; the number 99.9 is not. The term 'short' refers to the fact that the integer is only two bytes big, which means it gets stored in two consecutive memory locations. The Amiga knows it must store the number in this way only if you tell it to do so by putting a % sign after the variable name.

As powerful as the computer is, each memory location inside the Amiga only holds positive number in the range of 0-255. Yet the largest short integer you can have is 32,767. How can the Amiga remember a short integer this big when the biggest number each memory location can hold is 255?

Well, it does it by treating one of the memory locations in a special way. The two bytes in which the short integer is stored are known individually as the 'low byte' and the 'high byte', which means nothing more than the fact that the low byte is stored lower in memory than the high byte. You might also hear them sometimes called the 'most significant byte' (MSB) and the 'least significant byte' (LSB), which refers to the fact that if the data stored in the MSB is changed, it has more significance to the end result than changing the data in the LSB. We'll stick to low byte and high byte for the moment. Apart from anything else, it's easier to type.

> ***"The divisor for byte 1 of the long integer is ... a very big number."***

The value held in the low byte is the number of times 256 can be divided into the short integer. So, for instance, if our short integer is 257, the value held in the low byte will be 1. What gets stored in the high byte? You've probably guessed – yes, it's the the remainder; in this case another 1 gets stored.

So, coming at it from the other angle, when you ask the computer to PRINT the short integer, it looks up the low byte, multiplies it by 256, adds the result to whatever value is stored in the high byte, and then displays the result. In our example that would be (1*256)+(1*1)=257.

But don't take my word for it. Type in and run Listing 1 which will show you how short integers work by declaring one and then displaying the values held in the low byte and the high byte by PEEKing into the memory locations. The word 'address', by the way, is just another term for 'memory location'. The address of Short% is the same memory location its low byte is stored in, and it is found by using the VARPTR keyword.

Alter the value of Short% a few times to see the values in the low and high bytes change. See how the figures add up?

If you enter a negative number you'll become severely confused because all of a sudden the figures stop adding up. This has to do with the way the Amiga stores negative numbers. It's called 'twos complement' and involves logic and binary arithmetic. We'll tackle this subject another time because it deserves more than just a couple of paragraphs and I want to get right on with the other three numerical sub-types for now. Ok, that's the easy bit over with.... No, come back, I was only joking.

Four bytes big

Next up is the 'long integer', which is merely an extended version of the short integer and is declared by putting a & (pronounced ampersand) after the variable name. Instead of the integer being stored in two bytes, for a long integer four bytes are used. Again, the most significant byte will be stored first, followed by two more bytes and then the least significant byte bringing up the rear. We'll refer to them as byte 1 (MSB) to byte 4 (LSB).

The values the Amiga actually stores in these four bytes are worked out exactly the same way as for the short integer, except on a bigger scale. You'll recall that the divisor for the short integer's low byte was 256 (which is byte 3 of the long integer). Well, the divisor for byte 2 of the long integer is 256*256 (65,536) and for byte 1 it's 256*256*256, which is... pauses for effect... erm...

1 – Short integer declared

```
Short% = 257
PRINT "Value of variable Short% =";Short%
'
' get the memory location
' of the lo-byte of Short%
'
addr = VARPTR(Short%)
'
' low byte
'
PRINT "Address";
PRINT addr;"(low byte) =";PEEK(addr);
PRINT "... which means";
PRINT PEEK(addr);
PRINT "* 256 =";
PRINT (PEEK(addr)*256)
'
' high byte
'
PRINT "Address";
PRINT addr+1;"(high byte) =";PEEK(addr+1);
PRINT "... which means";
PRINT PEEK(addr+1);
PRINT "* 1 =";
PRINT (PEEK(addr+1)*1)
```

a very big number. 16,777,216 actually. You may have noticed a pattern appearing by now: byte 2 is 256 to the power 1, byte 2 is 256 to the power 2 (squared, in other words), byte 1 is 256 to the power 3 (cubed).

So let's work out by hand, or rather by calculator, what the Amiga would store in each byte for the long integer 16,843,009.

First divide it by 16,777,216 (256 cubed), which comes to 1 with 65,793 left over. So we have a value of 1 in byte 1 (MSB). To get the value for byte 2 divide our remainder by 65,536 (256 squared), which is 1 again, with 257 left over. Now divide this remainder by 256, which lo and behold is 1 again (so 1 in byte 3), with 1 left over, which goes straight into byte 4 (LSB). So what the Amiga stores in the four memory locations which represent the long integer 16,843,009 is 1111.

Long integer listing

Listing 2 does the same for long integers as Listing 1 does for shorts. Again, play around with it and add up the right-most columns to check that the result is in fact correct.

The important practical differences between short integers and long integers is that longs take up twice as much memory as shorts, and because shorts are stored in fewer bytes, calculations on them are quicker than on longs.

Now we come on to decimal numbers, which are mostly referred to as 'floating point' or 'floats', but also as 'real' numbers. We'll call them floats. Again, they can be positive or negative.

Floats milked

There are two types of floats: single and double precision. There's nothing mysterious about this; the terms merely refer to the maximum number of digits used – single precision uses a maximum of seven and double precision uses a maximum of 16. So the floating point number 12345.12345123 4512345 would end up being stored as 12345.12 in single precision and, logically, 12345.1234 5123451 in double precision.

Naturally, double precision floats take up more memory than single precision floats – eight bytes as opposed to four – and calculations on them are much slower (although more accurate) than with single precision. The way floats are stored in memory is very complicated indeed, and differs from one implementation of Basic to another. It has to do with things called 'exponents' and 'mantissas'. Like twos complement, this has to be the subject of another article. If you really can't wait, take two aspirin and have a quick read of Appendix D in your AmigaBasic manual while the rest of us tackle the second Basic variable type; the string.

2 – Long integer declared

```
Long& = 16843009&
PRINT "Value of variable Long& =";Long&
'
' get the memory location
' of the start of Long&
'
addr = VARPTR(Long&)
'
PRINT "Address";
PRINT addr;"(byte 1) =";PEEK(addr);
PRINT "... which means";
PRINT PEEK(addr);
PRINT "* 16777216 =";
PRINT (PEEK(addr)*16777216&)
'
PRINT "Address";
PRINT addr+1;"(byte 2) =";PEEK(addr+1);
PRINT "... which means";
PRINT PEEK(addr+1);
PRINT "* 65536 =";
PRINT (PEEK(addr+1)*65536&)
'
PRINT "Address";
PRINT addr+2;"(byte 3) =";PEEK(addr+2);
PRINT "... which means";
PRINT PEEK(addr+2);
PRINT "* 256 =";
PRINT (PEEK(addr+2)*256)
'
PRINT "Address";
PRINT addr+3;"(byte 4) =";PEEK(addr+3);
PRINT "... which means";
PRINT PEEK(addr+3);
PRINT "* 1 =";
PRINT (PEEK(addr+3)*1)
```

3 – The next three bytes

```
Myname$ = "Jeff"
'
Descriptor& = VARPTR(Myname$)
'
Len1& = PEEK(Descriptor&)
Len2& = PEEK(Descriptor&+1)
Addr1& = PEEK(Descriptor&+2)
Addr2& = PEEK(Descriptor&+3)
Addr3& = PEEK(Descriptor&+4)
'
Length& = (Len1&*256)+(Len2&)
Address& =
(Addr1&*65536&)+(Addr2&*256)+(Addr3&)

PRINT "Length of string =";Length&
PRINT "Address of string =";Address&
PRINT "String = ";
FOR Counter& = 0 TO (Length&-1)
  PRINT CHR$(PEEK(Address&+Counter&));
NEXT Counter&
```

Strings are what we store characters in. We let AmigaBasic know that we want to store a string by putting a $ after the variable name and enclosing the characters to be stored in double quotes. Like this, for example:

```
Myname$ = "Jeff"
```

A string can be a maximum of 32,767 characters long, although the AmigaBasic editor will only let you type 255 characters on every line so you have to join shorter strings together using 'concatenation' if you want to create massively long ones.

That linking feeling

And no, concatenate has absolutely nothing to do with the Catholic mass. It simply means, 'to chain or link together: to connect in a series'. This joining together is achieved with the addition sign, although you must remember you are not merely 'adding' strings; you are in fact 'joining' them. So by this process, you could end up with something like the following code:

```
FirstName$ = "Jeff"

SecondName$ = "Walker"

WholeName$ = FirstName$+"
"+SecondName$
```

You can join as many strings together as you like, provided the number of characters in the concatenated string doesn't exceed 32,767.

Why 32,767? Well, the answer has a lot to do with how strings are stored in memory.

Two things happen when you declare a string in a program. First the program sets aside an area of memory large enough to hold the string; one byte per character. Second it remembers how the long the string is, and where in memory it has put it, and stores this information as five consecutive bytes in its data area – that's the same place the data for numeric variables is stored.

These five bytes are known as the string's 'descriptor', because they describe where the program can find the string and how long it is.

The first two bytes of the descriptor are the length of the string, worked out using the same low byte and high byte system as we did with short integers. So if the string is 257 characters long, the low byte will hold the value 1 (1*256) and the high byte will also hold 1 (1*1). Remember that the biggest number we can hold in two bytes (allowing for negatives) is 32,767. Which is why strings are limited to that length.

The next three bytes of the descriptor are the address of the start of the string. You should be able to guess how this is worked out by now. Try it and check with Listing 3 to see if you're correct (look for how Address& is calculated). AS

NOT BASIC ENOUGH?

If you find you're having difficulty understanding how to work with Amiga Basic, write down your problem and send it to me, Jeff Walker, ABC of Programming, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW, and I'll reply through these pages.

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Battle of the Basic



"Basic is a popular and easy-to-learn programming language, but which Basic package works best with your Amiga? Let's find out."
Cliff Ramshaw

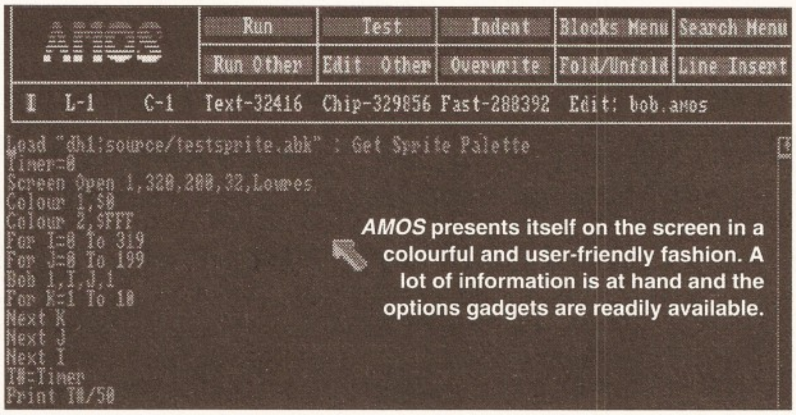
Cliff Ramshaw launches into a pile of compilers and a preponderance of interpreters to find the best buys

Many people coming to the Amiga from smaller computers will be familiar with Basic. So for programming the Amiga, Basic seems like the obvious choice: it is powerful, easy to understand and, with some of the versions now appearing, it is fast.

There are several versions of Basic for the Amiga. Some of these are compilers and some are interpreters. Compilers produce programs that are faster than those put together with interpreters, but the programs are more difficult to debug.

Each of the Basics reviewed here have their own idiosyncrasies, some of which are markedly different from standard Basic. And yes, there is a standard, but nobody seems to pay much attention to it. One reason is that the standard doesn't encompass such things as digitised sound and blitter chips – language designers have had to develop their own ways of dealing with these. The first product to successfully overcome this problem was *AmigaBasic*, written by Microsoft, and so has claim to being a standard. Both *Blitz Basic* and *AMOS* take different approaches.

Having said that, all the Basics are of course basically Basic. So what is there to choose between them? Time to read on ...



AMOS presents itself on the screen in a colourful and user-friendly fashion. A lot of information is at hand and the options gadgets are readily available.

AMOS

AMOS is designed primarily for games writing, but can do pretty much what other Basics can. Game programmers go for it because of the superb support it provides for graphics and sound. It also comes with an interrupt-driven interpreter (one that works 50 times a second, independently of the main program) called AMos Animation Language, or AMAL for short.

What's up Doc?

The documentation supplied with the program is in two parts: a ring-bound manual describing the language and its use, and a slim Extras manual explaining the utilities (sprite designer, map maker, menu editor and so on) supplied on the *AMOS* Extras disk. The latter is an addition to the original package and useful if only because it supplies an index to the main manual.

The documentation is good, but a little inaccurate in places. It has a friendly, encouraging tone for the novice and gets straight to the point by introducing the manipulation of sprites early. The people at Mandarin obviously know why people would want to use *AMOS*.

AMOS has its own look and feel; one that usurps the Amiga's operating system and so stops the machine multi-tasking. This might seem unfortunate, but who wants to write a game that can be slowed down by someone trying to run a word processor at the same time? In fact, the main display of *AMOS* is attractive, quick and offers plenty of editing options. One nice feature is the facility to switch between the editing screen and an output screen, for which the programmer is supplied with a small movable window in which commands can be typed directly. This is great for debugging.

AMOS brims over with language facilities. It supports just about every standard Basic statement and function (although the syntax tends to be a little on the 'rugged individual' side of things) and adds many graphics and sound commands. These make *Amiga Basic* look positively undernourished. They're much faster in operation, too.

Fast talking

AMOS is an interpreter. Even so, it is no slouch. But although it performs well on blitter operations, the other graphic test – filling the screen by plotting each pixel individually – slowed it down.

We managed to get our hands on a test version of the forthcoming *AMOS* compiler and great things are claimed for it, but aside from the BOB test (see results on page 80) the compiler showed little improvement in speed over the interpreter. However, we'll be running a much more thorough shakedown in the near future to find out what's what.

continued on page 78

Back to Amiga Basic

Amiga Basic is an interpreted version of Basic which comes on the Extras disk supplied with the Amiga. It is descended from *Microsoft Basic*, the most popular of Basics on microcomputers, but has many new features. As well as commands to control sound, graphics and sprites, it includes many concepts from other high-level languages. These are mostly control structures, giving the programmer more ways to express the ordering of events in the program, the way in which repetitions of code fragments should occur and when and how repetition should stop.

It is a very powerful language. Unfortunately, it is incredibly slow. Not only is it slow when it comes to executing programs, it is slow when it comes to writing them. Few people can have used *Amiga Basic* for any amount of time without becoming irritated at the way they have to click on an 'OK' box after every error message. Or the speed at which the listing window is updated whenever it is move or re-sized. Or the way it scrolls far past the bit of code you are interested in because it remembers key presses at a far greater rate than it is able to scroll the listing. And so on and so forth, *ad nauseam*.

Nevertheless, because of its wealth of features and its omnipresence Amiga-wise, it must be the standard by which all other Basics are judged.

Checkout

Amos

Documentation.......11/15
Easy to understand, fairly extensive and with plenty of information about the way the Amiga works thrown in for good measure.

Ease of use.............12/15
Attractive editing and output screens, with the ability to create stand-alone executables by including a run-time version of the interpreter.

Facilities.................27/30
As a language designed primarily for writing games, it offers a great deal for more general purpose programs too.

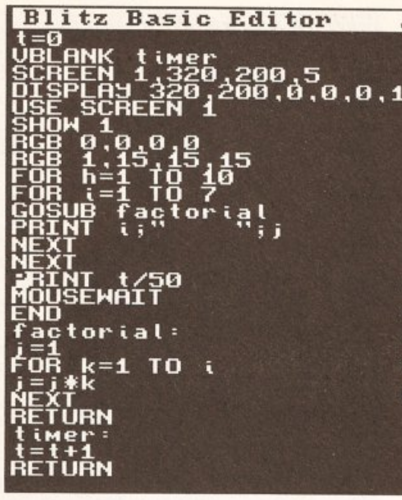
Speed 11/25
Fairly average, but its manipulation of sprites is speedy in the extreme.

Price value.............12/15
A neat little package for the money.

AMIGA SHOPPER 73/100

A good choice for writing games, and more diverse applications besides.

continued from page 77



Blitz Basic provides blistering speed, coming out top in all the speed tests, but its control structures are somewhat archaic and knock points off the program's ease of use.

BLITZ BASIC

Like *AMOS*, *Blitz Basic* by Memory And Storage Technology is another language aimed at games writers. If anything, it is more directed towards this purpose than is *AMOS*.

The manual is a slim affair, with most of the contents page taken up by a list of the commands *Blitz* supplies. There is no index, which is frustrating. I found the documentation to be too brief and illogically arranged. Too much space was devoted to explaining the graphics commands and not enough on the basics of Basic.

Blitz Basic is a compiler but, unlike most, it is integrated into a single environment. This means that programs can be edited, compiled and run from the same screen, thus speeding up development time.

Two different font sizes are available which make it possible to see more of the program on screen, but at the expense of a little eye-strain. All options are chosen via an Intuition menu system.

A large number of statements and functions are supported by *Blitz Basic*. Most of these are concerned with graphics and sound commands (more power than with *Amiga Basic*, but using different concepts). Aside from these, the language is surprisingly old-fashioned in its ideas. You won't find any of those fancy modern control structures here – no REPEAT...UNTILs, WHILE...WENDS and so on. These are different ways of marking out a repeating piece of code, along with a condition on which the repetition should stop and the rest of the program be executed. They are not necessary – any of these can be done in *Blitz Basic* using simpler statements – but they make programs easier to read. *Blitz Basic* only supports two variable types: numbers, which must lie between -32768.9999 and +32767.9999; and text strings which are of a fixed length. This suggests that the language was designed to be easy to compile and quick to run. It does place some limitations on the programmer though, and strings that extend beyond their declared length can cause a system crash.

As the speed tests show, the factors given above result in very fast code – the fastest of all the packages on test. However, I can't imagine any use for *Blitz Basic* beyond writing games and demos.

HERE ARE THE TEST LISTINGS WE USED TO RATE INTERPRETER

TESTING, TESTING ...

I devised five tests to put the different Basics through their paces. Although all the packages reviewed supposedly support the same language, it's surprising how many changes had to be made to the code in order for it to run under each one. The listings given are all in *Amiga Basic*, which, since everybody has a copy, must form a standard on the Amiga.

In all tests, the main criterion was speed. After all, most people are likely to be programming to achieve graphic effects and these have to be fast. Each test was performed on a low-resolution, 32-colour screen to keep things nice and uniform.

... one two three (four five)

The BOB test loads in the data for a sprite from disk. Once this is done, the clock starts ticking. It moves this sprite across the whole of the screen, with a slight delay in the middle to cut down on flicker. This test demonstrates how well the language interfaces with the blitter. The sprite is a software sprite, displayed by blitting the graphics data into the screen memory.

The factorial test is designed to rate the language's speed with integer arithmetic. This time the program computes factorials between one and seven. This is because *Blitz Basic* has such a limitation to the size of its numbers and can't handle the factorial of eight. Oh well. In fact, *Blitz Basic* was a bit unusual all round in this test. It doesn't use integers: all numbers are between -32768.9999 and 32767.999. Unlike all the others, it won't allow recursion either, so I was forced to convert the program to calculate factorials by iteration, which is somewhat faster than the recursive method used by all the others. To slow things down and make the timings a wee bit more significant, the whole operation is performed ten times.

The next Herculean task is Screenfill. This one tests the speed of graphics by plotting every pixel on the screen. Aside from a couple of iterative loops, there's nothing more to it than calling an operating system plot routine. It sounds straightforward, yet the differences in performance are rather intriguing.

The string test is one for those of you interested in writing text handling programs: adventure games, computer poetry, word processors even. The program loads in a file of text as a string and then splits this up into individual words by checking for spaces. These words are stored in a string array and output to the screen. The words are then sorted into alphabetical order and output once more.

Finally, the trig test concerns itself with floating point calculations. It is based on a trigonometric identity – namely, that for any angle the sum of the square of its sine and the square of its cosine comes to one. The test cycles through 360 degrees (expressed in radians), printing out each angle and the result of this equation (which should be one, but usually works out to be almost one because of inaccuracies in the way decimal numbers are stored).

STRING TEST

```
OPEN "dh1:source/text" FOR INPUT AS 1
text$=INPUT$(LOF(1),1)
CLOSE 1
t!=TIMER
SCREEN 1,320,200,5,1
WINDOW 2,,,0,1
PALETTE 0,0,0,0
PALETTE 1,1,1,1
DIM word$(100)
j%=1: n%=1
FOR i%=1 TO LEN(text$)
     IF MID$(text$,i%,1)=" " THEN
          word$(n%)=MID$(text$,j%,(i%-j%)):
n%=n%+1:j%=i%+1
     END IF
NEXT i%
word$(n%)=MID$(text$,j%,(i%-j%-1))
FOR i%=1 TO n%
     PRINT word$(i%)
NEXT i%
PRINT "sorting "
FOR i%=1 TO n%-1
     FOR j%=(i%+1) TO n%
          IF word$(j%)<word$(i%) THEN
               x$=word$(j%):
word$(j%)=word$(i%): word$(i%)=x$
          END IF
     NEXT j%
NEXT i%
FOR i%=1 TO n%
     PRINT word$(i%)
NEXT i%
t!=TIMER-t!
PRINT t!
```

SCREENFILL TEST

```
t!=TIMER
SCREEN 1,320,200,5,1
WINDOW 2,,,0,1
PALETTE 0,0,0,0
PALETTE 1,1,1,1
FOR i%=0 TO 319
     FOR j%=0 TO 199
          PSET (i%,j%),1
     NEXT j%
NEXT i%
t!=TIMER-t!
PRINT t!
```

TRIG TEST

```
t!=TIMER
SCREEN 1,320,200,5,1
WINDOW 2,,,0,1
PALETTE 0,0,0,0
PALETTE 1,1,1,1
FOR i!=0 TO 2 STEP (1/180)

     j!=SIN(i!*3.1415926#)^2+COS
     (i!*3.1415926#)^2
     PRINT i!,j!
NEXT i!
t!=TIMER-t!
PRINT t!
```

CHECKOUT

Blitz Basic

Documentation................6/15
Too brief, not indexed, and peculiarly ordered.

Ease of use.................... 9/15
Easy enough, but the editor could be better.

Facilities.......................15/30
Plenty of support for graphics and sound, but not much of a Basic in other, more fundamental respects.

Speed...........................21/25
Like greased lightning.

Price value.....................8/15
A little on the pricey side compared to its competitors.

AMIGA SHOPPER 59/100

An excellent language for games (that don't involve many numbers or strings), but not much use for anything else.

GFA BASIC

GFA Basic is available both as an interpreter and a compiler, although the interpreter is needed for the compiler to be of any use.

The documentation is reassuringly dense (for a Basic manual, that is). It begins with an overview of the editor and then goes on to describe the different types of variables supported. After that, commands are described alphabetically, but within subsections relating to such things as operators, numeric functions, files, graphics and so on. Rather than a full index, there is one relating only to the Basic commands and library calls. This is less than useful: a newcomer to the language, wanting to know how to plot a point on the screen, for example, is faced with the prospect of guessing the required command (is it PLOT, PSET, POINT, DRAW?) before being able to find it.

The editor opens on its own screen. Two menus are available with the mouse, but most functions are duplicated by the function keys, the meanings of which are displayed at the top of the screen.

Programs are typed directly onto the screen, with the editor inserting tabs into the code to give it that 'structured' look. Programs can be run there and then, displaying output in a window on the Workbench screen, unless otherwise specified.

Well spoken

The language is extensive. It has all the familiar Basic commands as well as many modern control structures, plus *Amiga Basic*-like commands for graphics and sound. There are several allowed types of variables and good support of mathematical functions, including matrix manipulation and two types of trigonometric functions (quick, or slow and accurate).

In the tests, *GFA Basic* proved to be the fastest of all the interpreters. But the ubiquitous fly in the ointment manifested during the Blitter OBject (BOB) test. All the other versions allowed the moving of a BOB by simply altering its coordinates. With *GFA Basic*, the BOB had to be erased at its old position before being moved and re-blitted, which slowed things down considerably.

The compiler option runs from a menu window, taking programs written with *GFA Basic* and turning them into stand-alone executable files. However, doing this produced little increase in speed.

continued on page 80

CHECKOUT

GFA Basic

Documentation.......10/15
A fair amount of information, but tersely presented. The compiler section has hints for making code more efficient.

Ease of use.............11/15
Writing and running programs from the editor is simple, although compiling them requires the invocation of another utility.

Facilities..................28/30
Very extensive. Not *Amiga Basic* compatible, but sufficiently similar to make conversion easy.

Speed 12/25
Next to *Blitz Basic* it is the fastest, but not that much faster than the rest.

Price value.............11/15
The interpreter is competitively priced, and makes a good bargain when its speed and facilities are taken into account.

AMIGA SHOPPER 72/100

A good package, useful for just about any application, but I'm doubtful about the effectiveness of the compiler.

AND COMPILER PERFORMANCE

FACTORIAL TEST

```
t!=TIMER
SCREEN 1,320,200,5,1
WINDOW 2,,,0,1
PALETTE 0,0,0,0
PALETTE 1,1,1,1
FOR h%=1 TO 10
     FOR i%=1 TO 7
          GOSUB factorial
          PRINT i%,k%
     NEXT i%
NEXT h%
t!=TIMER-t!
PRINT t!
END
factorial:
     k%=1
     FOR j%=1 TO i%
          k%=k%*j%
     NEXT j%
RETURN
```

BOB TEST

```
OPEN "dh1:source/testsprite.obj" FOR INPUT AS 1
sprite$=INPUT$(LOF(1),1)
CLOSE 1
t!=TIMER
SCREEN 1,320,200,5,1
WINDOW 2,,,0,1
OBJECT.SHAPE 1,sprite$
PALETTE 0,0,0,0
PALETTE 1,1,1,1
OBJECT.ON 1
FOR i%=0 TO 319
     FOR j%=0 TO 199
          OBJECT.X 1,i%
          OBJECT.Y 1,j%
          FOR k%=1 TO 100
          NEXT k%
     NEXT j%
NEXT i%
t!=TIMER-t!
PRINT t!
```

Now see page 80 for the speed test results ...

JARGON BUSTING

ASCII: American Standard Code for Information Interchange. It is the data storage method commonly used when we type text files. It enables data to be exchanged between different computers.

BLIT: An operation performed by the Amiga's clever hardware blitter. This can move and alter areas of memory (usually graphics memory) at great speed. It is used extensively for animation.

BOB: A blitter object. This is a software sprite, moved around the screen by the blitter.

COMPILER: A means of translating a program to render it understandable to the computer. A compiler translates the whole thing into machine code before it is run. The compiled program is generally much faster than its interpreted counterpart.

EDITOR: The man who made me write this article. Also, like a word processor, an editor is a means of entering text into the computer. Programs are written with an editor before being turned over to a compiler or an interpreter.

FLOATING POINT: One way of storing non-whole numbers, ie those with decimal points. It is called floating point because there need not be a fixed number of digits before and after the decimal point (as there is, for example, with *Blitz Basic*), so the decimal point can 'float' as required.

INTEGER: Any whole number, positive or negative. Integer numbers take less storage space than those with decimal parts, and can be manipulated more quickly by a computer.

INTERPRETER: Another means of translating a program for the computer's convenience. An interpreter translates a program line by line as it is running, and therefore tends to be slow.

ITERATION: Literally, the act of doing something again and again. Most computing tasks involve some form of iteration. Basic supports this with the FOR...NEXT construct, which allows the programmer to define a repeating sequence and the required number of repetitions.

RECURSION: Something that is recursive makes reference to itself in its description. A recursive function, as part of the computation it performs, calls itself as a function.

TOKENISE: Many Basics, including *Amiga Basic*, don't store programs as ASCII files but instead reduce the commands to numerical codes (or tokens). This means that, for an interpreter, the translation process is faster and so the program will run faster. It also means that such programs take up less space.

continued from page 79

HiSoft Basic

HiSoft Basic is an *Amiga Basic*-compatible compiler, meaning that you can take all your *Amiga Basic* programs and make them run much faster. In theory, anyway.

Index ringer

The manual is a thick, ringbound affair and, wonder of wonders, it has an index. After a brief introduction, it presents the user with a short tutorial designed to illustrate some of the concepts of Basic as well as the use of the editor and compiler. The tone is light-hearted and easy going, if a little exclamatory (!).

Then comes an overview of the editor, followed by a description of the concepts of Basic. This covers such things as variable types, constants, recursion, arrays and compiler limitations (these 'limits' should not cause too many problems). It is an excellent idea to have all this information lumped together in a single section.

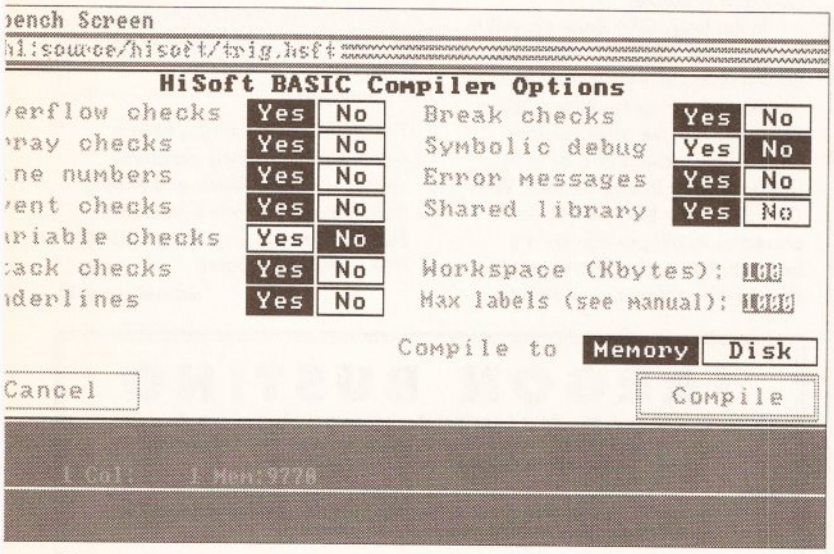
The majority of the manual is taken up with an alphabetically arranged description of Basic commands, each with an example. The appendices are extensive and include details of the compiler options, error messages, and how to convert programs written in other versions of Basic.

The compiler works in a standard Intuition window – not pretty but functional. It is integrated with the editor, so programs can be typed in directly and compiled there and then. It is possible to compile a program to disk or to memory. Compiling to memory is useful because a program can be tested immediately without leaving the development environment (unless it Gurus, that is) and altered if necessary. There is also the option to link the HiSoft library with the program. If this is done, the compiled program is completely stand-alone. On the other hand, not doing this means that the program is much shorter, but the library has to be present in the LIBS: directory of the system disk. This is useful if more than one HiSoft program is to be run, since they can all share the one copy of the library.

Compatibility

The language is compatible with *Amiga Basic* and has a couple of extra features thrown in for good measure. Just about all *Amiga Basic* programs should compile without alteration (as did the test programs).

However, next to *Amiga Basic*, *HiSoft Basic* proved to be the slowest of them all, according to the test programs. This is particularly disconcerting considering it is a compiler. Typically, the programs ran between two and three times faster than their *Amiga Basic* equivalents, but the BOB test ran nearly five times more slowly. Taking this and the disappointing result of the Screenfill test into account, it can be seen that *HiSoft Basic* is less than ideal for graphics-oriented programs. AS



There are plenty of options available in *HiSoft Basic* and a lot of commands, but speed is not the foremost word in its vocabulary.

SPEED TEST RESULTS ● SPEED TEST RESULTS ● SPEED TEST RESULTS ● SPEED

Language	Tests (speed given in seconds)					Speed rating
	BOB	Factorial	Screenfill	String	Trig	
Amiga Basic (interpreted)	548.04	3.50	150.32	6.56	37.10	18/100
AMOS (interpreted)	65.48	2.92	53.96	4.10	33.12	46/100
AMOS (compiled)	24.02	2.82	41.06	3.68	33.1	50/100
Blitz (compiled)	51.72	1.26	7.32	1.50	9.36	82/100
GFA (interpreted)	3866.98	2.78	23.32	2.94	15.54	44/100
GFA (compiled)	3865.40	2.52	16.72	2.56	14.46	51/100
HiSoft (compiled)	2516.65	3.56	60.48	2.86	20.12	39/100

Best Applications Buy

GFA Basic
With good support for all the Amiga's facilities, *GFA Basic* is about the strongest version of Basic available. Writing applications with it should be about as painless as can be. However, I suggest you check your GFA programs with the compiler before buying and expecting huge speed improvements.

Best Games Buy

AMOS
AMOS has just about everything the games writer could want – scrolling screens, fast sprites, sound and speech. Writing games could not be easier, but don't get carried away with it though: if you want to write some really fast games, I'm afraid it's time to sit down and learn assembly language.

AMIGA SHOPPER BEST BUYS

Checkout

HiSoft Basic

Documentation.......12/15
Good, easy to read and plenty of information. The innovative idea of an index makes the finding of this information relatively easy. Unfortunately, *HiSoft Basic* still lacks the depth of information required for a truly professional language package.

Ease of use............10/15
Fairly straightforward. The editor is powerful, but not all functions are available from the manual. It is useful to be able to compile and run a program without leaving the editor.

Facilities.................26/30
All the nice commands of *Amiga Basic*, but with a couple of extras thrown in too.

Speed 10/25
Not recommended for those speed-intensive applications.

Price value...............9/15
A good, sturdy product for the price.

AMIGA SHOPPER 67/100

Not a bad compiler. The package has good documentation and plenty of useful features, but it is a shame HiSoft could not have improved its performance a little more. Even so, *HiSoft Basic* is good for the more pedestrian applications.

Shopping List

AMOS (interpreter)................£49.99
AMOS (compiler).....................£29.99
Compiler due for release at end of June
from **Mandarin Software**
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Ellesmere Port,
South Wirral L65 3EB
☎ 051 357 1275

Blitz Basic...........................£69.99
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Berkshire RG11 1FA
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AMOS action



Phil South looks at a bundle of disks from the AMOS PD Library, plus more AMOS Hints and Tips

Welcome to the AMOS column; the place where every month you can find tutorials and lots of hints and tips for use with Mandarin Software's *AMOS* Basic interpreter. And for this month, as well as looking at some interesting programs from the AMOS PD Library, I'll be looking at a few ways of saving space in your AMOS programs by compressing graphics into smaller spaces.

Demos corner

There are a lot of very good demos around this month, and the one which gets my personal seal of approval is *Zenn Sound Box* (APD144). This is a very clever music demo which uses AMOS to the full and gives you some very nice music soundtracks to listen to/play with. The tunes are played through a well drawn CD/Stereo interface, and this really looks like some of the classy music box demos I've seen in the PD, most of which, I hasten to add, were written in machine code.

On the games front, there are two nice games to look out for this month: *Pontoon* on APD149 and *Fruit Machine* on APD146. Both these games are very simple ideas, that have been done in so many other forms that it's not worth counting. But these are excellent demos of the power of *AMOS*, and a tribute to the technical skill of the programmers. Also try the excellent *Line Game*, *Spinvaders* and *Fast Food* on APD140.

Another notable mention is the *AMOS* program disk 7 (APD154) containing a variety of nice demos, such as this from John Gray:

```
Rem * Patterns.AMOS *
Rem * John Gray *
Cls 0
Curs Off : Hide
Paper 0 : Pen 2
Centre "Hold down left Mouse Button to Quit"
Wait 100
Do
   Exit If Mouse Key=1
   Ink 6
   P=Rnd(30)+4
   Print At(2,2);"Pattern
number ";P
   Set Pattern P
   Circle 155,105,55 : Paint
160,100
   Set Pattern P-2 : Ink
Rnd(15)
   Circle 155,105,65 : Paint
95,105
   Wait 150 : Cls 0
Loop
```

Short and sweet, and very clever. This just shows you some built-in patterns from *AMOS* and gives you an idea of the variety of things you can do to perk up your programs without having to draw too much yourself. Just filled shapes can make programs look very nice, even if you can't draw much yourself. This is the thing about computers; they amplify your abilities, and a lot of creative inability can be overcome by owning a powerful computer and a powerful language. All the demos mentioned here can be obtained from the AMOS PD Library, 25 Park Road, Wigan, WN6 7AA. ☎ (0942) 495261

Compressing graphics

You may wonder why a lot of the graphics you see in *AMOS* programs aren't accessible from disk. You will notice the Spack (or Screen Pack) command in the manual. What it does is compress IFF screens (or portions of screens) into banks of memory. Once in a bank of memory, the screens are saved with the program and can be unpacked onto the screen with the Unpack command. Here is an excellent example of this from the *Duckula Demo* by Gemini Software's Rob and Ray, to be found on APD disk 152:

```
Close Editor
Hide On
Music 1
A=4 : Rem **** Set bank counter to bank number 4 ****'
Repeat
Unpack A To 0 : Rem **** Unpack a picture
from memory bank A ****'
If A=4 Then Wait 400 : Rem
**********************************'
If A>4 and A<13 Then Wait 250 : Rem*   Pause
routines for pictures *'
If A=13 Then Wait 300 : Rem
**********************************'
Fade 3 : Rem ****  Fade picture from screen ****'
Wait 30 : Rem ****  Wait for fade to finish  ****'
Inc A : Rem  ****  increase memory bank by 1 ****'
If A=14 Then A=4 : Rem ****  Check for last
memory bank and reset back to bank 4 ****'
Until Mouse Key=1
End
```

Nice one Rob'n'Ray. To get the screens into a memory bank, you need to write a small *AMOS* program to pack the screens into a bank, like so:

```
F$=Fsel$("*","","Load a picture")
Load Iff F$,0
Spack 0 To 1 : Rem Compress Screen 0
into a file in Bank 1
Print "The length of your new bank
is ";Length(1);" bytes"
Wait Key
Screen Close 0
Unpack 1 To 0 : Rem Recreate
Compacted Screen
```

Now if you go to direct mode and type Listbank, you'll get a listing of the current graphics bank.

Why should you use Spack and Unpack? Well, one of the most memory-intensive bits of code you can include in your programs is a graphics screen, and although you can read and write IFF style graphics, you can fit more in if you use compressed *AMOS* graphics. That way you can approach the kind of graphics quality available in commercially produced software, as the only way they can fit a huge game and graphics into memory is to crunch the graphics down a lot. Page 276 of the *AMOS* manual tells you more about Spack and gives you the full gen on ways of saving and loading sections of a screen, or even a brush. Brushes load into the screen at the top left corner, so to save a brush all you have to do is request the Spack command to compact only the top left square of the screen. Then once you've unpacked the graphic you can plonk it anywhere on the screen. This could be a series of mouth portions of someone's face, by which, rather than redrawing the whole head each time the character's mouth moves, you can just unpack a new mouth and stamp it over the bottom of his head. Anyway, that's enough for this month. Have a nice day. AS

AMOS News

***Amiga Shopper* subscribers will be interested to note that once you have your sub, you can also cop a demo disk of *AMOS* and some smart demo programs too. The disk is specially prepared by Mandarin Software and contains some very eye-catching, yet simple-to-follow demos. If you don't subscribe, and you're an *AMOS* fan, check out our subscription offer on page 63. You can't get this exclusive disk by any other means.**

The *AMOS* Compiler should be out at the end of June, and I hear that *AMOS 3D* is not far behind. The compiler works outside of *AMOS* itself, taking in an *AMOS* file and spitting out a smooth machine-code version of the program to save to disk. It makes *AMOS* an ideal development system. See Cliff Ramshaw's *Battle of the Basic* on page 77 of this issue.

***AMOS 3D* is a vector graphics module, enabling you to create your own 3D shapes and use them in your *AMOS* programs. The effect is similar to the kind of thing produced in the Elite space trading game, or in the more complex 3D vector graphics PD demos. More detailed news about these exciting programs next month, when I hope to be able to give you a sneak preview of these two great new modules for the *AMOS* system.**

SNOUTY ROOTS OUT A TITANIC TIP

Every month I will be printing hints and tips on AMOS from my own sources and from you, the readers. Whack your brainwaves on to a disk and send it to: Phil South, AMOS, *Amiga Shopper*, 30 Monmouth Street, Bath, BA1 2BW. Or if you're really hi-tech you can e-mail me on CIX as "snouty", and on Micronet or Prestel as MBX number 219997854.

This program by Jonathon Thompson is a good example of how to test mathematical expressions using algebra, and an example of 'reverse Polish notation'. Okay, so this is a fairly complex example, but I think you'll find you can adapt it to fit any algebra expressions you might want to try out.

While we're on the subject, I'd like to see someone write a program that solves quadratic equations. Anyway, although this program is slightly complex, it is very good to study. Nice to see someone using the more powerful commands of *AMOS* for a technical program rather than just whizzing graphics around. Here's what Jon says about it: "This program demonstrates the use of reverse Polish notation to efficiently evaluate any simple mathematical expression. Reverse Polish (or Postfix as it is also known) is so-called because it was developed by the Polish logician, J Lukasiewicz.

This notation makes the evaluation of expressions containing nested parentheses very simple indeed. The algorithm used here is called Dijkstra's Method. The rules of operator precedence are fairly standard and other operators should slot in very easily. Program limitations are that the infix expression must be 'well formed', including not having arbitrary parentheses, ie '(a+b)' or '(-a)' where 'a+b' or '-a' will do however, a+(-b) and (a+b)(a+b) (implied multiplication) are supported."

```
* * Infix - Postfix Expression Evaluator by J.N Thompson * *

Screen Open 1,640,200,2,Hires
Colour 1,$FFF
Pen 1
Dim VAR$(4),VAR(4)
'
Global VAR$()
Global VAR()
Global REVERSE_POLISH$
Global STACK$
Global OPERATOR$
Global CURRENT_SYMBOL$
Global INFIX_STRING$
Global EVALUATED$
'
OPERATOR$="=(+-)*/~^"
'
'-- give the variables some values that the
evaluator can look up and
'-- substitute for the name of the variables
'
Data "A",45
Data "B",12
Data "C",32
Data "D",9
For I=1 To 4
 Read VAR$(I),VAR(I)
Next I
'
'-- main loop. The user inputs a formula based
on A, B, C, and D
'
Print "Variables..."
For I=1 To 4
 Print VAR$(I);" = ";VAR(I)
Next I
Print
Do
 Print "Enter an expression to evaluate i.e
((A*B)(C+D))/B "
 Input ": ";INFIX_STRING$
 INFIX_TO_REVERSE_POLISH
 EVALUATE
 Print
 Print "Evaluates to: ";EVALUATED$
 Print
Loop
'
'
'-- the following two procedures do the business of converting to reverse
'-- polish and then evaluating the expression to a single value
'
Procedure INFIX_TO_REVERSE_POLISH
 '-- define variables
 '
```

This part of the procedure uses the Dijkstra method of forming reverse polish expressions from infix notation. It only handles single digit constants and single character literals. Check that the parentheses match. If they do then P=0, so we can diagnose if there are too few '('s or ')'s. If there is an error then REVERSE_POLISH$ will be set to null.

```
 STACK_TOP$=""
 REVERSE_POLISH$=""
 STACK$=""
 P=0
 For I=1 To Len(INFIX_STRING$)
  M$=Mid$(INFIX_STRING$,I,1)
  If M$="(" Then Inc P
  If M$=")" Then Dec P
 Next I
 If P>0 Then Print "Unmatched '('"
 If P<0 Then Print "Unmatched ')'"
 If P<>0 Then Pop Proc
 '
 '-- set up look-up table for precedences
 '
 Data 0,1,2,2,2,3,3,3,4
 Dim PRECEDENCE(9)
 For I=1 To 9
  Read PRECEDENCE(I)
 Next I
 '
 '-- set the string to upper case
 '
 INFIX_STRING$=Upper$(INFIX_STRING$)
 '
 '-- make implicit multiplications explicit
 '
 I$=""
 For I=1 To Len(INFIX_STRING$)
  If Mid$(INFIX_STRING$,I,2)<>")("
   I$=I$+Mid$(INFIX_STRING$,I,1)
  Else
   I$=I$+Mid$(INFIX_STRING$,I,1)+"*"
  End If
 Next I
 INFIX_STRING$=I$
 '
 '-- start of main loop, considers each character in INFIX_STRING$
 '
 While(INFIX_STRING$<>"")
  CURRENT_SYMBOL$=Left$(INFIX_STRING$,1)
  INFIX_STRING$=Right$(INFIX_STRING$,Len(INFIX_STRING$)-1)
  '
  '-- if the current symbol is an operand then add it to the reverse
  '-- polish expression
  '
  If Instr(OPERATOR$,CURRENT_SYMBOL$)=0
   REVERSE_POLISH$=REVERSE_POLISH$+CURRENT_SYMBOL$
  Else
   If STACK$=""
    STACK$=STACK$+CURRENT_SYMBOL$
   Else
    If CURRENT_SYMBOL$="("
     STACK$=STACK$+CURRENT_SYMBOL$
    Else
     '
     '-- the following starts to conditionally empty the stack
     '
     STACK_EMPTY=False
     MORE_NEEDED=True
     MORE_NEEDED=True
     Repeat
      STACK_TOP$=Right$(STACK$,1)
      PC=PRECEDENCE(Instr(OPERATOR$,CURRENT_SYMBOL$))
      PS=PRECEDENCE(Instr(OPERATOR$,STACK_TOP$))
      If PC>PS
       If(CURRENT_SYMBOL$=")")and(STACK_TOP$="(")
        STACK$=Left$(STACK$,Len(STACK$)-1)
       Else
        STACK$=STACK$+CURRENT_SYMBOL$
       End If
       MORE_NEEDED=False
      Else
       If(STACK_TOP$="(") or(STACK_TOP$="(")
        Print "**Error found on stack."
       Else
        REVERSE_POLISH$=REVERSE_POLISH$+Right$(STACK$,1)
        STACK$=Left$(STACK$,Len(STACK$)-1)
        If STACK$=""
         STACK$=CURRENT_SYMBOL$
         MORE_NEEDED=False
        End If
       End If
      End If
     Until MORE_NEEDED=False
    End If
   End If
  End If
 Wend
 '
 '-- now we have considered the string we must empty the stack
 '-- but discard any parentheses
 '
 STACK$=Flip$(STACK$)
 For I=1 To Len(STACK$)
  S$=Mid$(STACK$,I,1)
  If(S$<>"(") and(S$<>")")
   REVERSE_POLISH$=REVERSE_POLISH$+S$
  End If
 Next I
End Proc
Procedure EVALUATE
```

This section evaluates a previously converted reverse polish expression using a stack and table method of ordering the work to be done. At the end of the processing, the top of the stack (the only entry) will contain the address in the table where the final evaluation of the expression can be found, along with the set up table and stack.

```
 Dim TABLE$(100)
 Dim STACK(100)
 STACK_TOP=1
 '
 '-- represent the literals as constants in the table
 '
 For I=1 To Len(REVERSE_POLISH$)
  M$=Mid$(REVERSE_POLISH$,I,1)
  TABLE$(I)=M$
  For J=1 To 4
   If VAR$(J)=M$
    TABLE$(I)=Str$(VAR(J))
    J=5
   End If
  Next J
 Next I
 '
 '-- evaluate the reverse polish expression
 '
 For I=1 To Len(REVERSE_POLISH$)
  M$=TABLE$(I)
  A=0
  '
  If Instr(OPERATOR$,M$)=0
   STACK(STACK_TOP)=I
   Inc STACK_TOP
  End If
  '
  '-- get the operands for the operator to work on
  '
  If Instr(OPERATOR$,M$)>0
   Dec STACK_TOP
   O2=STACK(STACK_TOP)
   Dec STACK_TOP
   O1=STACK(STACK_TOP)
  End If
  '
  '-- evaluate each operation in turn replacing the current operator in
  '-- the table
  '
  If M$="+"
   A#=Val(TABLE$(O1))
   A#=A#+Val(TABLE$(O2))
   TABLE$(I)=Str$(A#)
   STACK(STACK_TOP)=I
   Inc STACK_TOP
  End If
  '
  '
  If M$="-"
   A#=Val(TABLE$(O1))
   A#=A#-Val(TABLE$(O2))
   TABLE$(I)=Str$(A#)
   STACK(STACK_TOP)=I
   Inc STACK_TOP
  End If
  '
  If M$="*"
   A#=Val(TABLE$(O1))
   A#=A#*Val(TABLE$(O2))
   TABLE$(I)=Str$(A#)
   STACK(STACK_TOP)=I
   Inc STACK_TOP
  End If
  '
  If M$="/"
   A#=Val(TABLE$(O1))
   A#=A#/Val(TABLE$(O2))
   TABLE$(I)=Str$(A#)
   STACK(STACK_TOP)=I
   Inc STACK_TOP
  End If
  '
 Next I
 EVALUATED$=TABLE$(STACK(STACK_TOP-1))
End Proc
```

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Cracking the Shell

Mark Smiddy introduces re-direction and explains how this sometimes confusing concept controls the heart of the system

Every time you open a Shell, AmigaDOS opens a window for you – a console window. This bit of jargon would normally appear in Jargon Busters, but it is a key principle as far as AmigaDOS is concerned. Intuition is a graphic-based bridge between you and AmigaDOS; AmigaDOS is a command line bridge between you and the device sub-system.

The term console stems back to the old days when some white-coated guy sat at a desk with a numeric keyboard and a teleprinter. If he was lucky, a few flashing lights might have been provided to monitor the status of the machine: a visual display unit or VDU. (Oddly enough, until very recently, Hollywood associated banks of lights with powerful computers – years after they were replaced by monitor screens.) Although the etymology of such terms has almost been lost in the mists of time, the meaning is just the same.

Console conciliation

Returning to the present, in AmigaDOS the console is made up from the keyboard – the input device – and an Intuition window; the output device. Every Shell behaves as if it has complete control of the machine, which is one of the effects of multi-tasking. The console window behaves as if it were the only one connected to the machine. Therefore, you could expand the window to fill the screen and use it just like that. From then on, the machine could be used as if it were running MSDOS, for instance.

In AmigaDOS you can have many console windows open – a maximum of 20 in most versions – or just as many as the machine's memory will allow in AmigaDOS 2.

This poses an interesting problem: since you only have one Keyboard, how does AmigaDOS know which Shell (console) is being used? The answer, surprisingly perhaps, is it doesn't. As I said, each console window thinks it has complete control of the machine – this is true. However, under Intuition, only one window can be active at any time. Therefore, when you activate the Shell you want to work in, it gets messages (key presses) from the keyboard. If you suddenly activate another window, AmigaDOS doesn't know – it just obediently waits for you to do something. Needless to say, this is all transparent; you just click and type.

> *"The best way to learn about the console and console re-direction is to try it for yourself."*

So what about output? Under normal circumstances there is only one keyboard (more on that later in the series) but you can have many console windows. This is the clever bit. Because each console (Shell window) is a virtual terminal – sharing part of the screen – AmigaDOS commands can send output to them even when another window is active.

This gives rise to some rather clever techniques – not all of which are suitable for beginners at this stage – but you should know about a couple of basic terms: COS and CIS.

Gissa CIS

CIS is an abbreviation for Console Input Stream. What? Ok, let's break that down. The console is a shell window. Input is anything that can

continued on page 86



"AmigaDOS is one of the most powerful device operating systems this side of UNIX – but power implies confusion. Read on, McDuff."

Mark Smiddy

BEGINNERS START HERE

This episode might get some of you wondering if AmigaDOS is the preserve of those with an IQ greater than 200. Don't worry, many of the early parts of this series will seem like that because each one introduces a different aspect of the system. It all comes together when you can view AmigaDOS as a whole. In the first few parts, I have made reference to scripts and editing things. These cases were intended for experienced users, but the time has come for you too to get a grip on the AmigaDOS screen editor, ED.

Friendly but crude

The 1.3 incarnation of ED is crude but it does the job. On the other hand, its counterpart, EDIT, is not very friendly. Both these commands can be found in the C directory of your Workbench. For this example, I'll show you how easy it is to create a simple program in AmigaDOS – a script.

As with all programming, the most important task is to decide what you want to do. The first of these short examples will mimic the classic 'Hello world' demonstration, often seen in introductory programming handbooks. The second just introduces an unconditional branch – like GOTO in Basic – to perform a simple closed (endless) loop.

In almost every Basic, to get 'Hello world' printed on the screen we could use the following program:

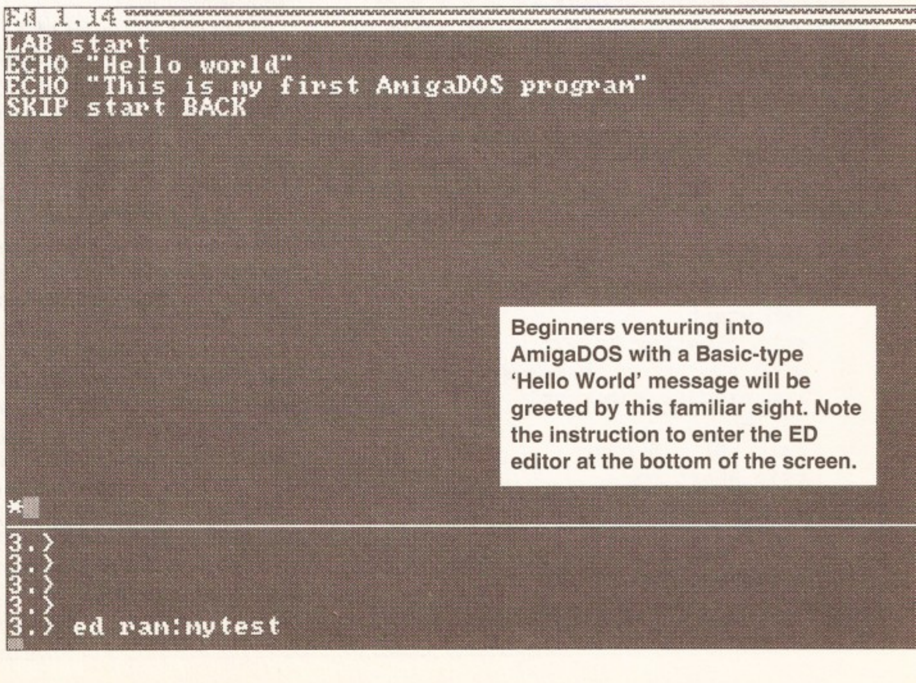
```
10 PRINT "Hello world"
```

Entering the RUN command would start the program. The situation is much the same in AmigaDOS, although the command names are different. The same program, written in AmigaDOS, reads like this:

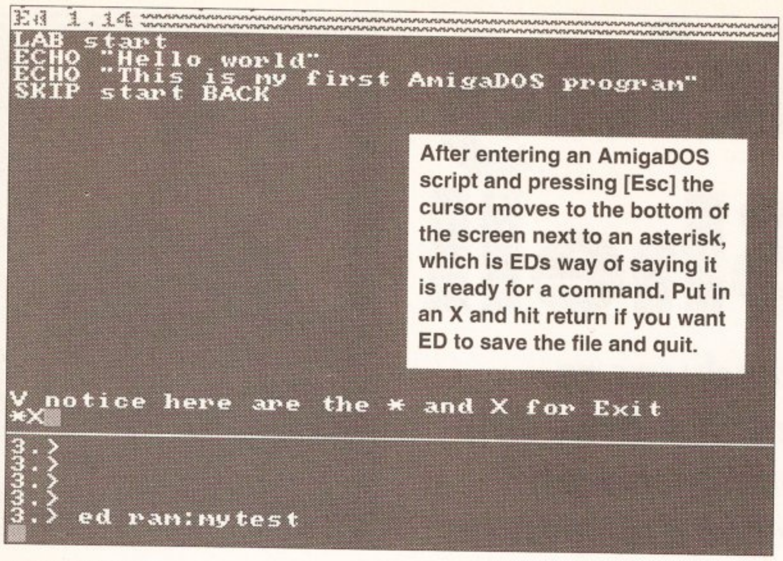
```
ECHO "Hello world"
```

ECHO is an AmigaDOS command which displays the string

continued on page 86



Beginners venturing into AmigaDOS with a Basic-type 'Hello World' message will be greeted by this familiar sight. Note the instruction to enter the ED editor at the bottom of the screen.



After entering an AmigaDOS script and pressing [Esc] the cursor moves to the bottom of the screen next to an asterisk, which is EDs way of saying it is ready for a command. Put in an X and hit return if you want ED to save the file and quit.

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be sent to, received and processed by the console. The stream an AmigaDOS term for the series of bytes sent to something. When you type something at the keyboard the console window echoes (displays) it.

COS, like CIS, is an abbreviation for Console Output Stream. Once again, this is the series of bytes – the stream – sent to the console device. Everything you type is sent to the console device's input handle, processed and copied to its output handle. Don't worry about those yet; COS and CIS are transparent at Shell level. Experienced users can play tricks with them without knowing what they are doing.

So what are the handles? Programmers will be familiar with these, but they will be new to most of you, so I'll use an analogy because it is vital that you get a grasp of this information if you want to get the best from AmigaDOS at any level.

Down the Roxy

Think of a room (a cinema is a good example) with two doors. Each door opens both ways – always outward from the flow of pedestrian traffic. To enter the cinema, you look for the

JARGON BUSTING

DEVICE SUB-SYSTEM: The software driving the hardware. The driving software makes all devices look more or less alike.

STARTUP SEQUENCE: List of AmigaDOS commands that are executed automatically every time you boot the machine from Workbench.

VIRTUAL TERMINAL: In AmigaDOS, every new Shell or CLI window is a virtual terminal. It behaves just like a conventional terminal but shares processor time and only occupies part of the screen.

AMIGADOS MASTER CLASS

This month, the idea is to execute a backward SKIP (for looping purposes) in a file which executes another script. Consider this example:

```
RAM:TEST1

.key dum
lab start
echo "Testing 1-2-3"
execute ram:test2
skip start back

RAM:TEST2

echo "hello"
```

This should work, but there's a bug in SKIP which stops it in its tracks. In effect, when you call EXECUTE, the position of the previous label is forgotten. This is aggravating, but there's a way around it – the side effect is that for some scripts this technique speeds things up. Now try this example, which is more complex as it includes the bug fix. Don't enter line numbers – they're there to highlight specific changes:

RAM:TEST 1

```
    .key dum
    lab start
    echo "Testing 1-2-3"
①   echo >T:stopme "break <$$> c"
②   run execute ram:test2
③   failat 11
④   wait >NIL: 5 mins
    skip start back
```

RAM:TEST 2

```
    echo "hello"
⑤   execute T:stopme
```

Now let's analyse what happens.

① This creates a small file called STOPME in the T: (temporary) assignment. If the script "RAM:TEST1" is running as process 3 (for example) this file would read:

```
break 3 c
```

because the <$$> is replaced by the process number. This feature is usually used to create multi-tasked variables in scripts, but it is equally valid here.
② Now the second script is RUN, creating another process which runs independently of the first. This cures the SKIP...LAB bug and stops AmigaDOS prattling around with multiple temporary files.
③ Sets the fail level at 11 – one higher than normal. This will be required at point 4.
④ Wait for the second script to finish. Delay is fixed at five minutes, even though we know the script will complete in seconds. The action of WAIT will be stopped by the second script.
⑤ At this point, TEST 1 is paused by WAIT and this script (TEST 2) has almost completed. As a parting gesture, it executes another script – the one created in TEST1. This automatically sends CTRL+C to the process currently under way in TEST 1 – WAIT – thus stopping it. This is why we have to raise the FAIL level at ③. If WAIT is terminated abnormally like this, it will stop the script with an ERROR condition. The re-direction to NIL: stops the WAIT command displaying "*BREAK" every time the script loops.**

A similar technique is employed, for a different reason, in Workbench1.3's startup-sequence. In this case, STARTUPII sends a break message to a WAIT in Startup-sequence. However, because this is a startup sequence the process number is always 1.

continued from page 85

argument on the console window – just like PRINT. You could enter this command directly from the Shell – like direct mode in many Basics – but we want to be able to execute this as a program. For this reason we have to put it inside a file. From the shell window type:

```
1>ED RAM:MyTest
```

This calls up the editor, ED. When ED starts, it tries to load the filename that is specified as an argument – RAM:MyTest in this particular case.

Just like EDdie

If the file cannot be found, ED assumes you want to create it and gives you an empty screen. In this case it is a file called 'MyTest' held on the RAM: disk. Now enter this:

```
ECHO "Hello world"
ECHO "This is my first
AmigaDOS program"
```

When you've done that, press the escape key. You will notice that the cursor (an orange block) moves to the bottom of the screen next to an asterisk.

This is ED's way of telling you it is ready to accept a command, as distinct from more text to be added to the file. Press X and then Return. This is ED's eXit command and tells it to save the file and quit. If you want to leave ED without saving, try pressing Q and Return (for Quit) instead.

Now all we have to do is run the new command. Script files are interpreted by a special command, EXECUTE, which takes the name of the file to run as an argument. To run your first program, simply enter the following:

```
1>EXECUTE RAM:MyTest
Hello world
This is my first AmigaDOS
program
1>
```

Now let's add a small embellishment in the form of

an unconditional loop. This will make the program execute until we tell it to stop. To make the correction, we just run ED again with the original parameters:

```
1>ED RAM:MyTest
```

As the window appears, it contains the program you just entered. The cursor will be at the start of the first line. Press Return and the first line will move down one line. Now enter this:

```
LAB start
```

Use the cursor (arrow) keys to move the cursor to the end of the last line and press Return. Now enter this:

```
SKIP start BACK
```

Encountering the SKIP instruction, AmigaDOS searches through the script until it finds the label called 'start'. Having found it, the program continues running from there.

The completed program should look like this:

```
LAB start
ECHO "Hello world"
ECHO "This is my first
AmigaDOS program"
SKIP start BACK
```

As before, save the file and exit ED by pressing ESC-X. Now run it as before. Notice how it seems to have run amok? To stop the program issuing greetings from now until eternity, press the CTRL and D keys together. It is similar to the CTRL-C sequence used to stop AmigaDOS commands, but this one halts execution of script programs.

And, er, that's it – ED

You have now learnt the basics of ED. If you want a little more practise, try entering the scripts demonstrated in AmigaDOS master class. You may not fully understand how they work as yet, but at least you will get a little more practise at using ED.

door marked 'Way In', grasp the handle and open the door (in my local flea-pit they just knock the doors down). Similarly, on the way out you find the door marked 'Exit', grab the handle and open the door.

However, the doors are usually the same – from the outside, they're marked 'Way In' and from the inside, 'Exit'; it's all relative. Now let's suppose in our fictional cinema, the commissionaire suddenly discovers that the theatre is full. He could re-direct cinema-goers to a different door and into a completely different film.

Beyond Hollywood

So what on earth has all this got to do with AmigaDOS? Well, COS and CIS are usually referred to as console handles – door handles of the console room if you like. The stream is like the flow of people through the doors. And the commissionaire? This is where the bit about re-direction comes in because in AmigaDOS it's possible to change the handles for COS and CIS and therefore send output to, or receive input from, somewhere else. It's a bit like changing the labels on the doors. Always remembering there are only two doors: one in and one out.

BLITS & BOBS

AmigaDOS is a simple interface between you and the Amiga's devices – from the printer to disk drives and windows.

The really clever bit is this. First, it's possible to re-direct every command you type; second, you can re-direct input from and output to devices, and that means files. This might not seem very exciting yet, but wait until you see what it can do. The best way to learn about the console and console re-direction is to go and try it for yourself.

For this example we'll just send a stream of people who have come to see *Bambi* (on at the console) to see *VideoDrome* at the RAM: instead. Or, in more down to earth terms, we'll get a directory of the current disk and send it to a file in the RAM disk. Remember not to type the 1> at the start of the line; it is just to indicate a CLI prompt.

```
1>DIR >RAM:VideoDrome ALL
1>
```

So what happened? The DIR command works but nothing appears. The '>' symbol instructs the Shell to divert all OUTPUT (COS) to the filename following it. In this case, output has been sent to a file on the RAM disk, called VideoDrome. Let's take a look at what has happened:

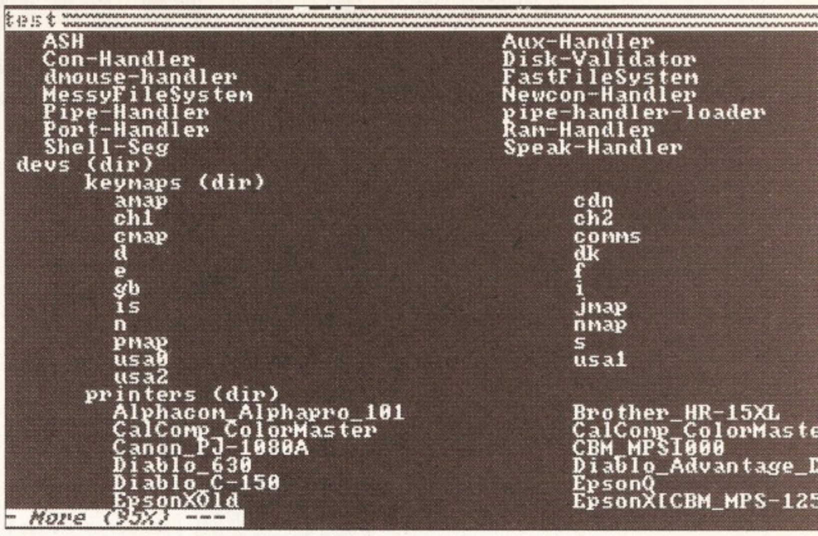
```
1>DIR RAM:
Clipboards (dir)
ENV (dir)
T (dir)
VideoDrome
1>
```

This might not seem a lot of use, but the file contains a complete directory of the whole disk which you can view at leisure using the file viewer, MORE, like this:

```
1>MORE RAM:VideoDrome
```

Once MORE is running, you can get help on the available commands by pressing the [H].

That was a general introduction to re-direction and console windows, which I'll be looking at in much more depth a little later in the series. For now, you might like to try re-directing your own commands to files to see how the technique works. AS



After creating a temporary file containing the Workbench directory, use the MORE utility to display it, one screen at a time, as shown above.

GOT A PROBLEM JOHN?

If you are bogged down with any aspect of AmigaDOS whatsoever, drop a line detailing your conundrum to: Mark Smiddy, *Amiga Shopper*, 30 Monmouth St, Bath BA1 2BW. I'll do my best to lose it on my desk – er, figure out an answer. Sorry, no personal correspondence can be entered into. (Thanks Miss E from Chorley, the scones were delicious.) Desperate personae, with absolutely no regard for telephone bills, can EMail me on CIX "SMIDOID" or find me lurking furtively in the *Amiga Shopper* conference.

SMIDDY'S RED HOT TIP

This little tip is for AmigaDOS/ARP versions 1.3 and above, partly because it uses ALIAS and partly because the NIL: device did not work correctly in earlier versions. The idea for it came from Charlie (ARP) Heath's PD utility, RUNBACK; a patch that allows processes to run completely in the background. RUNBACK is not required for AmigaDOS 1.3 and above because the facility is already there. The ALIAS is defined as follows:

```
ALIAS BACK RUN <NIL: >NIL:
```

And you use it like this:

```
BACK [command] [options]
```

For instance, to start the PD file viewer ZAP:

```
1>BACK ZAP
```

Beginners are probably wondering what all the fuss is about. Indeed, if you try to BACK DIR or something similar, nothing seems to happen. BACK was devised so you can start programs from the Shell then close it down. If you try this, many programs will prevent the Shell window from closing until they exit. Of course, BACK is useless for most AmigaDOS commands as it is only intended for Intuition based applications.

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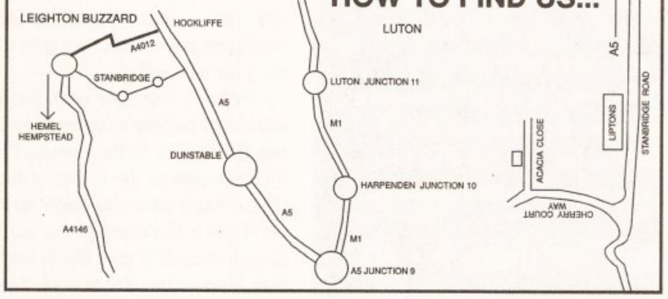
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Getting baud

Nick Veitch hooks into our comms column to download the lowdown on what goes on inside your modem when it's bashing out a bulletin

"Comms is a fun way to stay in touch with other Amiga owners, but for many it is shrouded in mystery. I'll rip those gaudy shrouds off so you too can see how easy it all is."
Nick Veitch

The whole idea of comms is based around one single, simple concept – the transfer of information. While this purpose is served by Emilio Anorak logging onto his local BBS and posting the message "Emil was ere" on the noticeboard, the macroscopic level is a far more thrilling proposition. The exchange not only of messages, but of text, statistics and, in a much larger proportion in the Amiga world, the spread of PD and shareware programs is the lifeblood of comms and perhaps even the Amiga itself.

Baud yesterday

In the early days, the only devices that had previously been hung off the serial port were printers. If printers could handle the complexities of printing out hard copy, then surely the system would work just as well for shoving information down the phone line. It did, at least for a while.

The standard system for transmitting and receiving text is via a format known as ASCII (American Standard Code for Information Interchange). It is solid, reliable and as old as IBM (nearly). It is perfect for sending text (because you can read it), but really lousy for binary data.

Text files consist only of alphanumerics, block graphics and special characters called 'control codes'. This doesn't account for all the possible binary permutations, so ASCII code uses special codes to indicate control functions, such as linefeeds, clearing the screen, reversing text and so on. The trouble is that binary data could use any of these permutations. The result can be demonstrated by trying to use a text reader program to read a binary file. Try opening a Shell and entering:

```
TYPE SHELL.INFO
```

The result will be lots of gibberish, interspersed with screen clearing and flashing borders as the ASCII interpreter assumes parts of the data to be control codes.

This leaves us with a problem. How, for example, could we transfer an Amiga program? Or a screen file? Or a sound sample? If we can't even display it on the screen how can we expect to transmit it?

The trick is, of course, not to display the data on-screen. Instead we keep the binary program and data files in their original binary format and never try to treat them as ASCII. All we need now is an agreed way of transmitting the binary data – we need a protocol.

BLITS & BOBS

Have you ever noticed that when someone in an American film or TV program dials a telephone number, it always starts off with 555? (Check out Deckard calling Rachel from the sleazy club in Bladerunner.) With the American public being the litigious lot they are, film makers use the 555 prefix to avoid getting sued should they inadvertently use someone's real number. You've probably sussed that no phones in the USA answer to 555 prefixes.

Pack it in

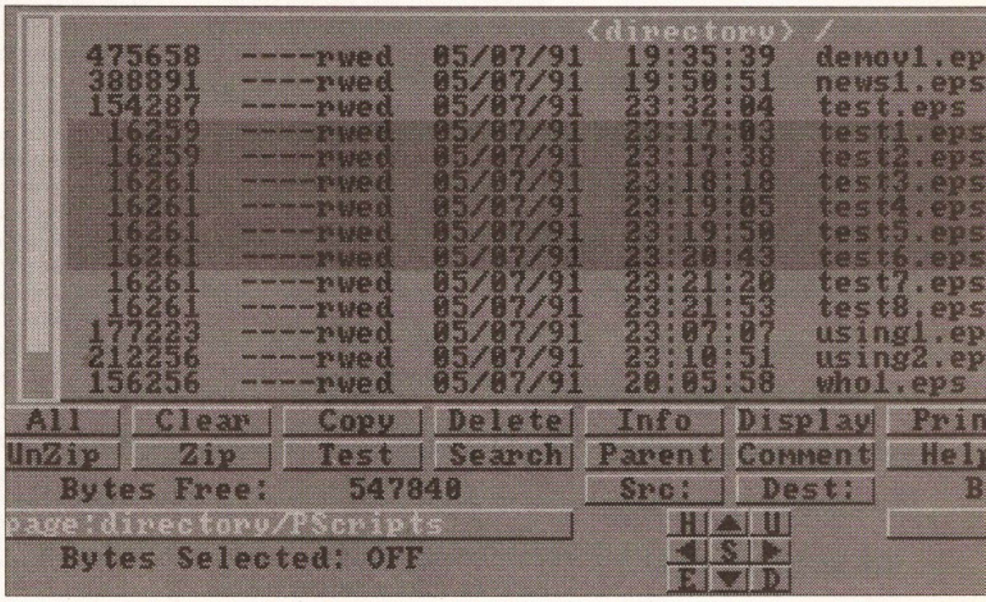
The binary protocols all send their data in packets. Actually, this was what had been happening all along, except that the packets were only one character long. A few special characters at the start and end of each packet indicate all the information required, so untainted raw binary data can be carried in the middle. This is behind the three main protocols used today.
The most popular methods are, in increasing order of speed: Xmodem, Ymodem and Zmodem. Almost all comms packages will handle Xmodem, but the others are slightly more rare. As the best Amiga comms packages are public domain or shareware, it make no sense to settle for less than the best. *(Bet you can't fit many more 'baud' jokes into this feature – ed.) (Oh yeah? – prod ed.)*

Went by the baud

Although Xmodem is still fairly primitive, it offers more advantages than merely the ability to transmit binary data. Any files sent always maintain their integrity – that is, there is no (well, very little) chance of the data being corrupted by line noise or someone's mother breaking in on the line. Cyclic redundancy checks are made at the end of each block and, if there is an error, the block is sent again. Although there is obviously a time penalty for this, it is worth the cost. A program that arrives with even a few corrupt bits is basically a piece of junk. If a program file becomes corrupt, the side effects can range from the trivial (a misspelt name in the copyright message) to the disastrous: a bug that will corrupt a hard disk.

Ymodem is a slightly more streamlined version of Xmodem, and increases the transfer speed somewhat. The king of the transfer protocols at the moment is Zmodem: it's in a league of its own, cunning-wise. Because line noise is more likely to interfere with certain pieces of data more than others – long stretches of zeros or ones – this protocol dynamically alters the size of the data blocks. Re-transmitting faulty blocks is the major time waster, so if an error occurs, the blocks are made smaller, increasing their chance of being error-free and reducing the amount of time lost if they must be re-transmitted. If there is a good stretch of error-free transmission then the block size is increased again, decreasing the number of block headers and so increasing the actual speed of data transfer. This may seem like a fairly simple 'fix', but in my experience it cuts transfer time by around 40 per cent, meaning less time on the phone and consequently less to explain when the bill comes in.

You might think that line noise doesn't pose that much of a threat until you try to download a file from the States. Zmodem ensures that no



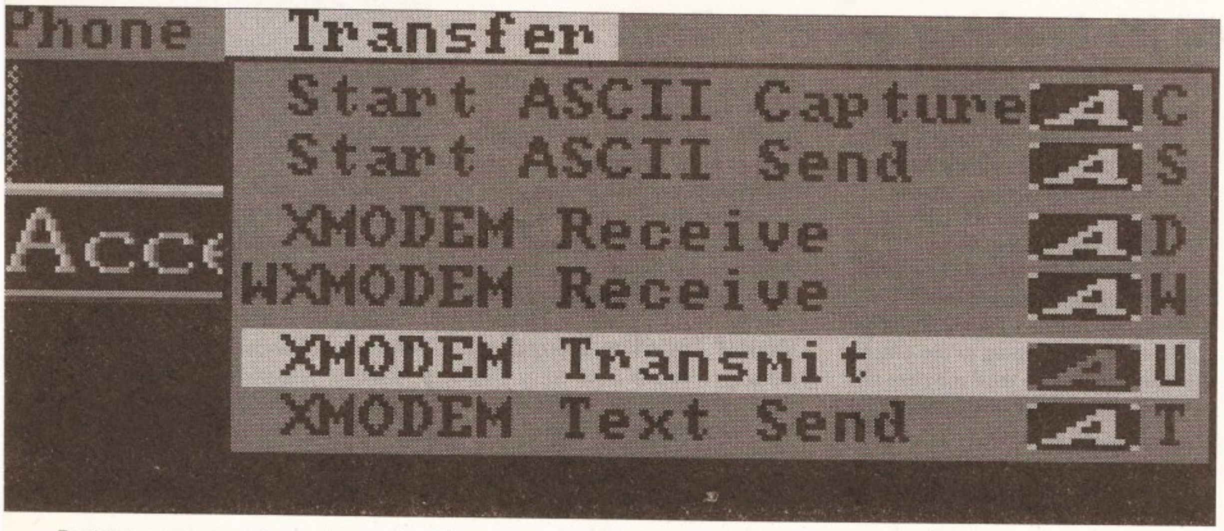
***PKAZip* is a prime example of a user-friendly archiving program.**

continued on page 90

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matter how long it has taken, you'll have a usable file.

Another cunning feature of Zmodem is its ability to keep track of how much of a file has been downloaded. If, perchance, you get logged off a BBS in mid-download – someone blunders through your room and trips over a lead – Zmodem can remember the last packet that came through. When you re-establish your



Popular comms package *Access* has Xmodem, but Zmodem comes as a handy support-file option.

connection and start downloading again, Zmodem will continue where it left off.

Zmodem will also allow batch downloading. If you are downloading three files from the host

> ***"Nowadays, everything has to be nice and mouse driven. A nice requester for file names and lots of yummy pull-down menus."***

system, there is no reason why the data can't be transmitted in one great stream and then sorted out when it gets where it's going.

As a final reason for voting Zmodem 'Mr Protocol, 1991', several host systems can automatically detect when a transfer begins and ends, with no need to type strange, host-specific gobbledygook. This makes it easy, especially for first-time users.

Like ASCII senders, X/Y/Zmodem are machine independent, which means that if you are using Zmodem on an Amiga, you can swap files with anyone using Zmodem, no matter if they are using a Mac, a PC or a Cray. As long as your machines are linked via their serial ports the data will get through.

Raiders of the host Arc

A spin-off from the battle for cheaper comms has been file compression utilities. If you wander around the file sections of any BBS you will come across large numbers of files with the file extensions ".ZIP",".ZOO", ".ARC" or ".LZH".

These files have been created from a compression program. This process involves various methods of pattern matching, run-length coding and other iterative reduction methods. The resulting file is usually around 45 per cent smaller than the original, making for shorter download times and also leaving more space on the host system.

There are three main contenders for the title of top system. *Arc* is the oldest and least efficient. It is also the slowest on the Amiga. *Zoo* and *Lharc* are fairly well matched. *Zoo* is slightly faster in operation, but *Lharc* generally returns greater efficiency. These systems are, like the transfer protocols, machine independent and should theoretically work even if the file was archived on a more primitive machine like the Mac or the PC – theoretically that is. Some *Arc* programs do not rigidly follow the standard and, while they remain completely compatible with other Amiga packages, they can stray a little at times.

Baud free

All of these basic archive utilities are in the public domain and freely available on any bulletin board (usually not archived) that uses them. It is wise to download all of these files as early on as you can to save frustration and re-dialling later on.

The utilities, in their most basic form, are all CLI functions with various command parameters enabling archiving, de-archiving, listing, testing and all sorts of other things. To get a list of the various options, just run the program with no parameters and some help text will be shown.

Of course, that sort of CLI-based anorak-user interface couldn't go on for long. Nowadays, everything has to be nice and mouse driven. A few drop shady gadgets over here, a nice requester for file names and lots of yummy pull down menus. There are quite a few of these third-party shareware solutions around, the best of which is probably PKAZip. I find it slower and more fiddly than just going to the command line, but there you go. What I'd like to see is a nice menu-driven utility that handles all the different compression types.

Remember I said way back at the beginning of this article that ASCII was alright for text transfer? Well, not any more it isn't. The latest development to sweep the boards is off-line reading. The premise is this – even if you are connected at the lowly speed of 1200/1200, when typing or reading messages in the noticeboard areas of a BBS, both your Amiga and the host system are waiting for your much slower brain to process the information. You can't type as fast as the data is transmitted and, unless you have found a successful training course in the back of the Sunday glossies, there is no way you can possibly read at the sort of speeds at which you receive messages from the BBS.

Baud a line

When an off-line reader system is in operation, the host BBS will search through its message banks and locate all the messages that you have not accessed yet, according to the topics you are active on. These are then compressed and sent as a binary file to your Amiga. When you have logged off, you'll then be able to leaf through these messages using the program previously downloaded from the host.

The cunning bit is that you can then reply to the messages while you are off-line. The system will store your replies and also remember the threads they were attached to. Next time you are on-line, you can upload this packet and all your replies will be filed in the appropriate sections. This means that all the reading and writing of messages (while on-line) takes place at the effective speed of your connection, not the effective speed of your brain. This might not be so notable a saving on a slow system, but at 9600 baud these transfers will take a matter of a few seconds. Not only do you cut your phone bill by a sizeable proportion, but you can also free up the lines for other users. AS

JARGON BUSTING

Anorak: A quilted nylon, wind cheater-type jacket, usually encrusted with small metal badges. As worn by train spotters, ramblers, stamp collectors, etc. The term often refers to the wearer of the anorak, who can be identified by his or her droning, adenoidal voice.

Archive: A file that has been compressed for storage or transfer. Must be un-archived using the correct archive utility before use.

BBS: Bulletin Board System. An on-line stage-post for mail, notices and files. Can also refer to the software used.

Binary files: Essentially anything that is not an ASCII text file. The file may be an IFF, a program or even a text file from a word processor which is not in ASCII format.

Protocol: The definition of rules regarding control codes, packet size, etc, of the transfer software.

Topics: Message areas on most BBSs are divided into sub-topics e.g. Music, Graphics.

Host: The host system is the hardware and software at the other end of the phone which receives your calls and allows access to the data stored on the system.

Thread: Since many 'conversations' in a message area break off into tangential discussions, most message areas are threaded to allow the messages to be read in a logical order.

Sound plumbing



"I'm a professional musician; I know what gear is needed to get the right sounds at the right price and I'm here to help you find the best buys. *Bars and Pipes* started out as an impressive sequencer, but with its new 'professional' tag it now aims for the serious muso. Does it succeed? Read on."

Jon Bates

As promised in last month's issue, Jon Bates sounds out the very latest sequencing program fresh from the land of stars and stripes – Bars and Pipes Professional

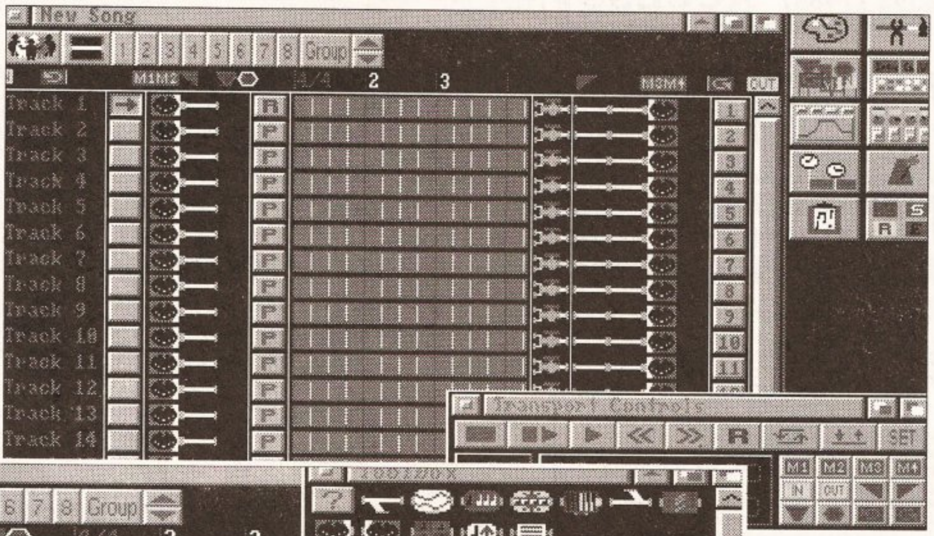
Bars and Pipes in its original form came out about 18 months ago. It was notable for several unique features that set it apart from other music sequencing software; namely its very logical and highly graphic user interface. Blue Ribbon Soundworks (formerly Blue Ribbon Bakery) has added many new features, smartened up its multiple windows and the whole package is now aimed at the serious user while retaining many of the features that made it such a friendly piece of software in the first place.

Plugging in

On booting up, you get three simultaneous and active displays. The main window is the Track display which uses the clever visual trick of defining the MIDI routing as a set of water pipes. Each track named on the left hand side is connected, via the pipes, to the central record section. After this, it is passed through a tap and through another set of pipes to the MIDI output. Both the MIDI in and out channels can be defined by clicking on the grey box at the appropriate side of the track. The fun starts with the devices, called Tools, which you can insert into the data stream (pipes) to alter and process the data and then route it through to the output point or, if required, to other outputs. The Tools can be placed either before or after recording. If placed before, then the recorded track is fixed according to what the Tool is designed to do; if after then its actions occur in real time as the track plays back. More about the Tools elsewhere as they deserve a decent exposé.

Name that tune

Tracks can be named with additional information hidden beneath by double clicking on the space. Each track has record, play or merge status. By altering the output 'tap', incoming data can be mixed with the track data – thereby providing a Thru function – track data only can be played or the tap turned off to mute the track. The centre of the display is a miniature graphic edit display that gives you a quick visual guide to the notes played into the track. Like many of the windows, Tracks can be re-sized, moved about or dispensed with. One neat little feature is the Expansion gadget; a great feature that blows the window up to its maximum size. This should have been implemented by many other programs ages ago as it saves time when re-sizing. It is activated by clicking on an additional grey triangle in the corner of the window. If you want to see more than 16 tracks at once, (the program itself has no limit on the number of tracks you can use; it's the amount of RAM that is the deciding factor) you can use what is called 'Interlace' which puts the screen into high resolution.





The boot up screen (above) with movable windows. Note the highly graphic style of display.

You want windows? There's as many as you need in *Bars and Pipes Professional*: this is really only a few of them (left).

Plumbing the sync

When it comes to synchronization, *Bars and Pipes Professional* will work with external MIDI clocks, MIDI Time Code and SMPTE. For the latter, it is compatible with the Dr T Phantom interface and will display data on a time elapsed base rather than by bar and beat. Any cues can be written into the program and aligned accurately with the Time Line Scoring facility. Enter the exact start and finish time for the cue and the program will calculate and insert the correct tempo to fit and move the selected track(s) to start from the beginning of the bar. Both the tempo map and time line scorer appear graphically in the main edit windows with their own separate areas. All data can be stored in MIDI File format #1 (the one for multiple tracks) by using a conversion program stored on the program disk.

BEGINNERS START HERE

Sequencing is usually defined as the recording of MIDI data as it emanates from the instrument it is performed on. When played back, the receiving instrument will reproduce the performance exactly as it happened.

To that simple theory, sequencing software applies a whole host of functions. Usually the display is decked out to represent a tape recorder – one that can record more than one source of sound at a time. In short, a multi-track machine. MIDI data can be assigned to 16 channels. Theoretically, this means that up to 16 separate instruments can be connected all at once and reproduce 16 individual sounds and separate musical parts. Unlike the multi-track tape recorder, the way sequencing software works is usually like this: you have one main keyboard connected , via the computer and software, to a number of instruments. Some of these instruments may well be capable of playing several sounds simultaneously on separate MIDI channels (multi-timbral). Since there is only one keyboard, each part of the piece is played in separately. This doesn't really cause a problem as any previous parts can be heard back at the same time as the new track is recorded.

Once the data – notes, pitch bend velocity, etc – is stored, the sequencing software can manipulate it in many different ways. It can correct timing, let you correct notes that were played inadvertently, alter the speed of the playback, change the whole key of the piece and divide the music up into sections and repeat, delete and insert these sections wherever you like. At any time the data can be saved to disk.

Put simply, if you imagine that a sequencing program is to music what a word processor is to words, then you won't find yourself going too far wrong.

Be warned though. When I used this function it seemed to have the alarming property of instantly dumping the entire program without any warning whatsoever.

Included in the Track window is the Group function. This allows you to set up eight independent groups of tracks, all of which can be recalled instantly at the touch of the screen button. Like the Solo track feature which forms part of this window, not only does it have relevance to the tracks that are playing but it is also used in the several editing modes to rapidly define tracks that are to be cut, pasted or otherwise manipulated. The columns displayed in the window can also be shuffled about by the arrows in the lower line. The only permanent display area contains icons for the different windows/modules of the program. If you remove a main window, its icon appears here so you can recall it. As in the the rest of the program, icons are colourful and very graphic. They are employed to call up the Tempo Palette, the Toolbox, Song Construction, Tempo Map, Mix Maestro, Time Line Scoring, Metronome, the Clipboard and accessories for converting files.

> ***"If you are a beginner, it is a program you can grow into, provided you can afford it in the first place."***

First movement

The transport controls, which consist of the usual tape machine icons, are now in a movable window (as opposed to the fixed position of the original program) so as not to get in the way. The display also shows both the exact bar and time position.

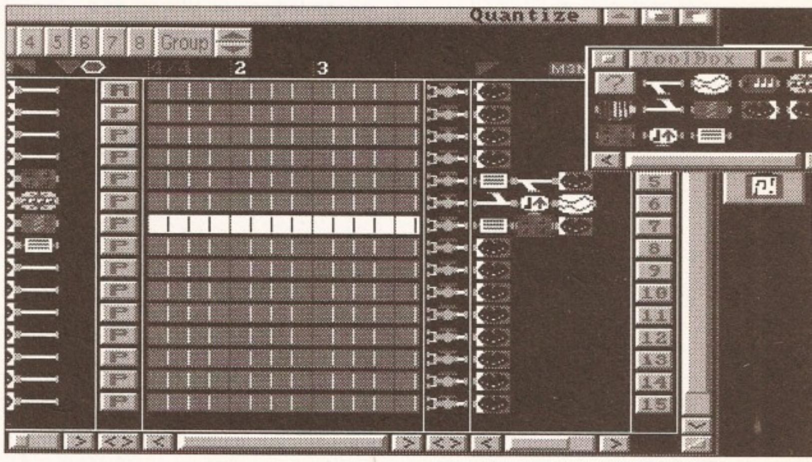
The overall speed of recording and playback is set here. You can define up to four autolocate positions, punch in and out, record cycle and editing markers and Loop Record. Probably the fastest method is to memorise the keyboard commands for transport – with several windows vying for screen space you seem to be moving it around all the time and many of the basic commands are duplicated on the QWERTY keyboard. If you are not careful it is easy to record over your first efforts as there are two controls that need to be confirmed before recording: one in the transport window and one in the track window. I found it easy to forget which track I was recording on and then merrily wipe over the lot, especially if the transport window had been moved to cover the track I had just worked on.

Opting for the Loop Record mode, you can record up to eight versions of the new track, audition each one and then choose which one you want to keep. This saves a lot of time when trying to get the right feel to a section; you don't have to stop and reset. The program seems to need a long think before the cycle record mode will work – probably because it rearranges the memory for this function. Use the time for an inspirational tea break. Maybe an extension of this idea would be to make it so that the 'takes' you might want to merge, or otherwise splice together to form the ultimate solo, could be dropped into the clipboard and then edited together. As it stands, you can only keep one complete final take; the others are ditched automatically.

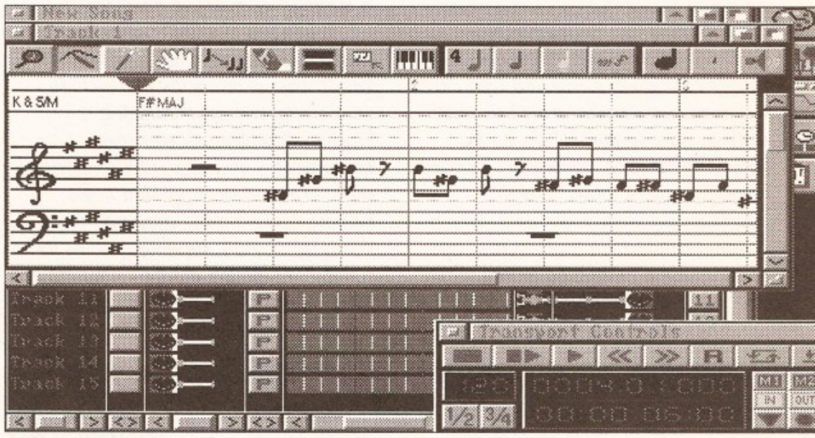
The program has some rather clever ways of both quickly setting and automatically altering the recording speed. There is the usual numeric display which can be incremented up or down by clicking on either the upper or lower half of the number. You can short cut this by hitting the 1/2 or 3/4 button, which drops the tempo by that fraction, or go for the tempo palette which has four fixed speeds and can be set to your favourite working tempos.

The most sophisticated option is the tempo map. While there didn't appear to be a way of recording tempo changes in real time – speed can be altered while recording and the playback will mimic this – there is a separate part of the track dedicated to tempo changes.

Different tempos can be inserted wherever necessary and you can speed up or slow down between any of them in several different ways by using the linear or logarithmic tempo curves on the menu.



The detail of connecting some of the wealth of the Tools into the pipework: the shot shows how tools can be applied to connect and process data both before and after recording has taken place.



The notation display. Notice the line above that logs the key changes.

Terrific tools

The really unique feature of *Bars and Pipes* is its Tool Box. This is best thought of as a file full of devices which affect MIDI data. The easiest way to use them is to open the Tool Box and drag any of the icons you see into the pipework of any track. It then bolts itself into the data stream

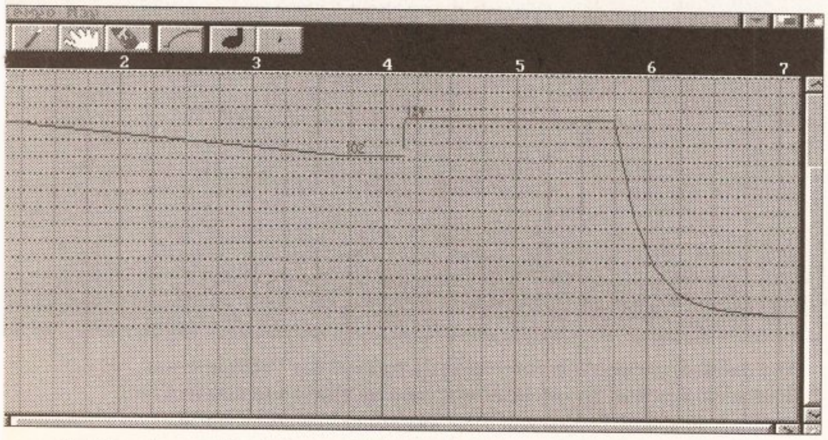
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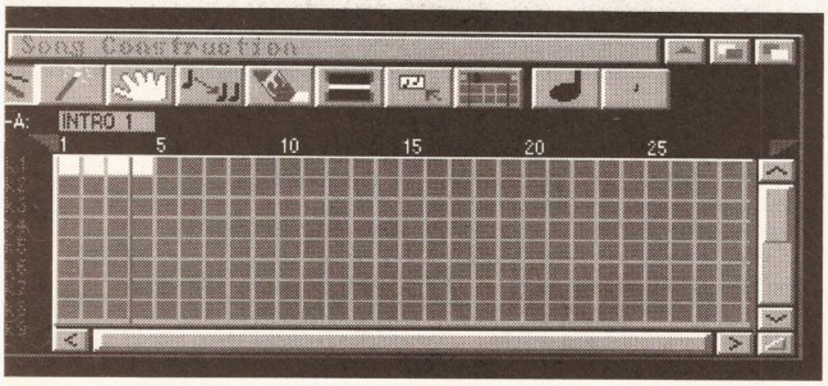
and performs its function. Whereas most sequencing software boasts advanced features, such as smart quantize, delay functions and data splitters to separate bass and lead parts into two separate MIDI channels, this is really only the starting point for *Bars and Pipes*. The tools that come with it possibly have the most adventurous and advanced semi-intelligent features that any music program for any computer has to offer today. There are automatic accompaniment generators, note length limiters, counterpoint generators, MIDI event delay, velocity limiters, Echo (from 1 to 19) with the repeat times linked to the tempo, plus increase or decrease in volume. Notes can be inverted, inverting the keyboard so that the high notes are on the left, or it can generate mirrored counter-melodies centred around any given note. Harmony can be generated and rules set governing what key and type of harmony is created. As well as pitch shifters, note range limiters and a very creative loop generator, you can combine any of these tools to become your own 'macrotool' which is then stored in the toolbox and can be part of the default sequence when you start up the program.

Tools can be used any number of times; you could put echo on three different tracks running simultaneously with a different setting for each. The functions that actually generate notes will require you to enter criteria with regard to the type and mode of scale used in the piece so that the data generated makes musical sense. By using branching and merging pipes, tracks can be interconnected and the notes generated can be played on a separate MIDI channel with a new sound if you so wish. As well as using the tools as real-time data altering and generating functions, within the track window you can also apply them globally to all tracks, a selected group of tracks or, via the edit window, to individual notes. Thanks to this feature, the program gives you more than enough rope to hang yourself twice over; all you do is supply the inventive application.

There are two extra disks of additional tools available with a whole host of functions that include controlling and synchronizing a Fostex R-8 multi-track recorder, compressing and expanding velocity data, creating arpeggiated notes, adding grace notes, creating note slides (glissandi), repeating notes for a specified length of time ... the list of these original and highly creative facilities is seemingly endless.



No it's not a medical chart – it's the tempo changes as represented by a graph. Notice that the curved lines are put in from the menu above.



How to construct a song. The section shown (light shaded blocks) has been named – intro – and can now be copied and dragged anywhere within the composition to form part of the overall song.

The original *Bars and Pipes* had jolly graphic displays to help you edit the notes without requiring a knowledge of music notation. In the professional version this has been added to considerably in order to cover a very wide range of editing functions.

The simple graphic display is still there, but it has now been augmented by true notation display and editing with print-out functions. You can use the key and scale tool to limit the notes entered within set scales or modes and another tool will identify and place chords within the score. The latter is linked to powerful functions that allow you to define any scale or key you wish to work in or even let you create your own scales and/or modes.

The display will also show the MIDI parameters, such as velocity and aftertouch, graphically and allows full editing of them.

Trax lyrical

Lyrics, which were part of the original program, can now be printed out, but not directly aligned with the notes. While the notation is more than adequate for editing and playing from on a local basis, it falls far short of being a true scoring package that you could use, say, to generate marketable sheet music. The notation itself is not well spaced. Tracks/instruments are labelled, but there are only very limited possibilities (if at all) for adding phrasing, musical terms, headers etc, and there is no provision for alto or tenor clefs (for, say, viola and 'cello) and you cannot print out a full score that contains all the parts.

This is disappointing, especially as the program has an inspired transpose option. One of the bugbears of scoring out parts is that some instruments need to read transposed notation in order to play the correct pitches: for example a trumpet will see and play a middle C but in fact it sounds as B flat. These are known as 'transposing instruments' and to cope with this, the program has a transpose display option that leaves the original MIDI data intact but alters the display. That in itself is not unique, but a second menu lists all the major transposing instruments. Selecting one automatically alters the display and also inserts the correct key signature and lists the instrument in the print-out, making this a much more assured and simple process than is possible in other software.

For fine-combing the data, there is an optional list of every MIDI event in the track, which can also display, edit and print out System Exclusive data. Lyrics are saved automatically when Midi File Format is used. Cut and Paste, Insert and Delete are well taken care of with a multi-purpose clipboard which can take several separate clips, name and store them away for future use.

BLITS & BOBS

French composer Claude Debussy (1862-1918) probably explained why number-crunching computers are so handy for writing music with when he said: "Music is the arithmetic of sounds as optics is the geometry of light."

JARGON BUSTING

MIDI: Music Instrument Digital Interface: the universal standard by which digital instruments, such as synths and computers, can communicate.

RAM: Random Access Memory. The amount of space that is available in the computer for data to be stored.

REAL TIME: Data is altered 'as it occurs' rather than when it is residing in the memory of the computer.

MIDI CLOCK: The regular pulses sent via MIDI which ensure that instruments listening will play at the same speed.

MIDI TIME CODE: Ensures that as well as playing at the same speed, the instruments will all stop and start from exactly the same place.

SMPTE: Society of Motion Picture and Television Engineers. A time code standard used in video, film and television. If the sequencer is to be used in conjunction with these media, it will need to be able to synchronize to the several formats that SMPTE has.

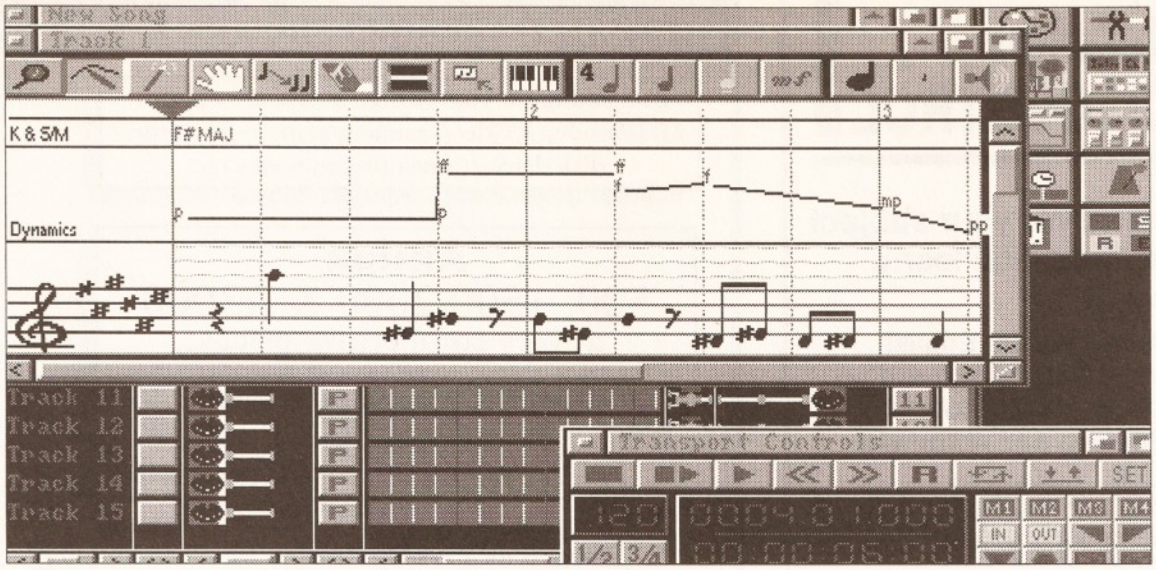
MIDI FILE FORMAT: A standard file format that enables MIDI data to be loaded from one program to another.

SYS EX: The specialised data that is transmitted via MIDI containing information that can only be understood by the make and model of instrument it is addressed to.

QUANTIZE: To round up data, usually meaning the correction of timing errors that occur in performance.

VELOCITY DATA: Information transmitted via MIDI that refers to the speed with which a particular note was pressed and thus affects the tone it creates.

MODES: An early (pre 1600) form of scales that is still very prevalent in folk music and has been used by contemporary jazz musicians.



Notation display with the dynamics shown graphically. These can be drawn in after the tune has been entered.

All definitions – key, edit positions, display parameters, etc – created for one track can be copied to any other track or applied to all tracks globally by using a Master Parameter menu, which imports and exports data to and from various tracks. (Personally I find the terms Import and Export more than a little confusing as they are usually reserved for either MIDI data or additional MIDI channels.)

As mentioned before, the editing of individual tracks or multiple numbers of tracks can also be defined using the eight group buttons. Each group can be subject to any global tool or edit function. Groups can be stored to disk, as can individual tracks, and there is provision for creating and naming short drum patterns so that any future rhythm tracks can be constructed with minimum fuss.

BLITS & BOBS

Musical maverick, Dave Howard, of Yon Yonson fame, added grist to the mill when he likened the activity of sound sampling to a bakery nicking slices of bread from other bakeries and wrapping it up as their own. True to his principles, he continues to sample from his own records.

Home on arrange

As well as facilities for editing individual tracks, there is an arrange feature termed Song Construction. This is a chain/link function that works in much the same way as on several other sequencing programs. You can name individual sections, having first been treated to a graphic overview of all the tracks, and each one is assigned a different colour. The sections can then be dragged about and placed in any order. This seemed to take a little bit of time and I wondered if it was actually re-copying the data – if so it is not a very effective way of using the available memory space. Each section can be subjected to the same global editing and tool facilities as an individual track or group and all the edits can be lined up, if required, either to the nearest bar/beat or to the nearest second. Any subsequent alterations made in the first appearance of a section are automatically updated when that section is repeated.

Mention must be made of the Mix Maestro. This is a graphic representation of a mixing desk – something that has become a common feature of many up-market sequencing programs. By utilising MIDI Control numbers 7 and 10, the volume for each individual instrument and the stereo balance (provided it really does output in stereo) can be adjusted and recorded 'on the fly'. Control numbers can be changed to enable the slider and pan pot icons to govern many other features as well, providing the receiving instrument is up to it.

Creative accounting

Bars and Pipes Professional has an inordinate amount of unique features and has a genuinely helpful and creative slant to it. It is a program that, thanks to the ToolBox, has functions no other software can come near. If you are an absolute beginner to music sequencing then it is a program you can 'grow into' provided, of course, you can pay for it in the first place.

Whether or not it is the absolute end in professional software, I am not so certain. It does require a fairly large memory to really get going and some of the features, notably the song construction, seem to take a little too long to formulate. Studios tend to want things to work immediately, if not sooner, and perhaps they might not like the wait. But from a strictly creative standpoint, there is very little available on the market that comes remotely near the capabilities of this program. AS

GETTING BEHIND *BARS*

Although *Bars and Pipes Professional* will run on 1Mb, you might be better off having a little bit more RAM to spare. It seemed to get quite full with only a moderate sized piece comprising four instruments and about 50 bars in length; a warning window advising of the lack of space pops up. There are helpful suggestions to make more memory available: ditching the undo buffer, closing the workbench, using a monochrome display and disabling the fast refresh screen utility. However these need to be weighed against the valuable smart options that you can load into the program like the lyrics, multiple tools, exploding windows (fast disappearing) and using several windows at once. Taking all things into consideration, to get the program to function at its best you would need 2 to 4Mb and maybe a hard disk. Using a TV as monitor will not show it off to its best. The graphic detail being what it is, a colour monitor is necessary to avoid advanced myopia.

SHOPPING LIST

***Bars and Pipes Professional*......$379**
***Bars and Pipes*......................@ £170**
by **Blue Ribbon Soundworks**
1293 Briardale NE,
Atlanta,
Georgia 30306
USA
☎ 0101 404 377 1514

According to Blue Ribbon Soundworks, no UK recommended retail price has been fixed as yet for *Bars and Pipes Professional*, nor has a sole distributor been appointed. We'll bring you more price information when we can get it.

In the meantime, both *Bars and Pipes* and its professional version should be widely available from various dealers in this country, but prices will vary. Read the adverts for more information, and don't forget to **shop around**.

CHECKOUT

Bars and Pipes Professional

Documentation.......19/20
Like many American programs, the manual is very comprehensive and takes you by the hand through every aspect of the program in easy-to-understand terms.

Features.................17/20
A big plus for its ToolBox and comprehensive editing, though notation facilities were lacking.

Ease of use.............16/20
Not too much to worry about here. Easy in its basic functions, but the more complex features require some serious study.

Speed 15/20
It seemed to take ages with some of the functions. This could have been because the memory I had available was limited. However I suspect that the program could be a little slicker.

Price value.............16/20
At the time of going to press the price had yet to be finalised for the UK. The best guesstimate would be about £350, based on previous prices. At this it represents a serious dent in your wallet, but there is probably nothing on the market at present that can really come near it in terms of creativity and facilities.

AMIGA SHOPPER 83/100

The program has an awful lot to offer and can be easily understood by a first-time buyer and beginner to music. It does have a lot of very slick features, but I wonder if these will tempt the recording studios in its favour. However, for the creative and serious musician it is an utterly invaluable piece of software.

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Teach to your own

Education correspondent Pat Winstanley casts an eye over educational software for juniors and delivers a lesson on how to find the best bargains

> **"If children are to truly learn from using a computer, the software must match up to a number of challenges. I'll tell you which packages have what it takes to give your young ones the advantage."**
>
> **Pat Winstanley**

Last month we looked at programs aimed at younger children, so this time it's the turn of the juniors. While games for tots concentrate on the very basics – letter, number and shape recognition – offerings for the eight to twelves assume that children are now familiar with the initial concepts. By assuming the basic tools, programmers can begin to work on the application of those tools, which happily makes for games with greater diversity and greater interest for the children. Although drilling the fundamentals of learning is still included, older children can both cope with and appreciate the bells and whistles often present in such packages without finding them a distraction or concentration breaker.

ENGLISH

By the time children reach the junior school most are fairly fluent readers, handling both simple and more complex words. The transition from simple printing to joined-up writing with much greater use of punctuation and upper-case letters is also beginning. Also being tackled are irregular words which cause even adults such confusion – bough, bought, through and so on.

At this stage, spelling makes its dreaded appearance. Philip (aged eight) is a fluent reader and prolific writer, but his spelling has to be seen to be believed. He seems fairly typical of his age group, which appears to have difficulty with the abstract of visualising a spelling then transferring it to paper. Two programs have proved useful in helping him to improve not only his spelling but his understanding of the way letters are combined – *Spell!* and *Better Spelling*.

BETTER SPELLING

Ages 8 – adult

This is a very polished package, which consists of two different spelling games, each with good use of graphics and animation. Both games use the same word lists, the contents of which range from simple three-letter words to spelling that would tax many adults.

Boarding school

A blackboard is used as the screen display, with an animated board rubber as an eraser between rounds and spinning ticks being awarded to one side of the board to measure success. While not affecting the educational side of the program, the graphics certainly give an incentive to the child. Although simple, the animation is anticipated as a reward.

The spelling game involves a word being flashed on to the screen for a few seconds before it is blanked out. The child then has to type the word from memory. After several correct tries, an anagram is presented as a bonus. Anagrams are tackled in earnest in the second game. This time a scrambled word is presented on-screen for the child to work out; the bonus stage being a hangman-style 'guess the word'.

Of the two games, my young testers found the spelling section rather less interesting to play than the anagrams. Although both games use the same words, the flash-card technique of the spelling section rather smacked of 'boring school spelling tests' and the bonus anagrams were a welcome relief. Perhaps the effort of concentrating and having to use memory as well as working out the spellings was the main cause, but the game certainly made the children think.

When the anagram game was tackled, the children were much more relaxed. With all the letters in front of them the task became more of a jigsaw puzzle than anything else. We found that a clue was often needed as to the nature of a word before the children could sort out the spellings – this method falling down when Mum couldn't work it out either. The puzzle element of the anagram game is probably its greatest advantage, adding a game flavour upon which children thrive without, detracting from the educational value at all.

SPELL!

Ages 5 – 15

Very similar to *Better Spelling* in concept, *Spell!*'s low price is reflected in its poor presentation. But it has some advantages over its more expensive rival.

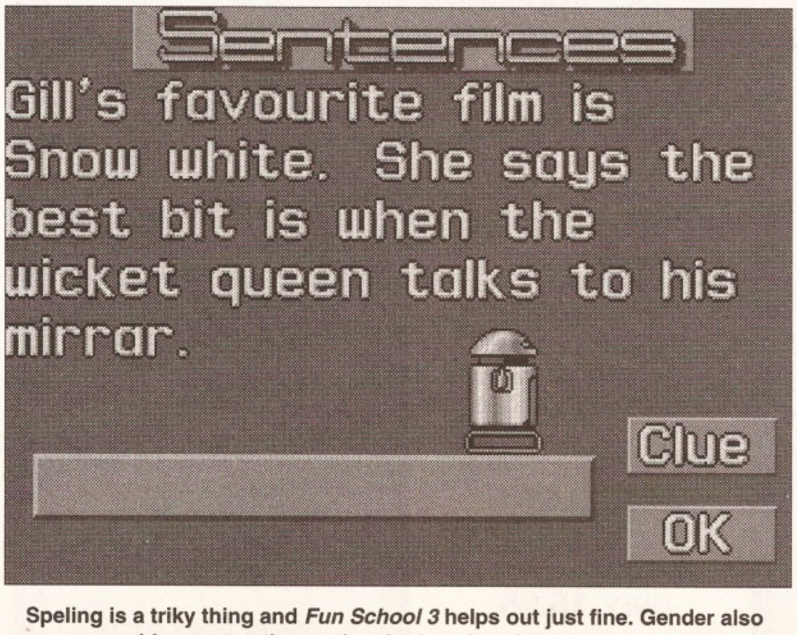
Five games are available in the pack. *In A Flash* and *All Mixed Up* are directly equivalent to the spelling and anagram games of *Better Spelling* – the children's reactions to the two methods being the same as in that package (anagrams preferred). Three more similar presentations found in *Rocket* – a hangman game – while in *Lunar Buggy* a word is hauled across the screen; the word must be typed in before it falls off the edge of a cliff.

Didn't he do well?

Conveyor Belt reminds me of the TV game show that always had a cuddly toy. The game sends several words rolling across the screen. Once gone, the child must type in as many as possible. This is an excellent test of memory as well as spelling and, since similarly spelled words are sometimes grouped together, younger children work best in pairs with one remembering the words for the other to spell. Like the flash-card technique, this one places a huge task on the child, no matter how simple the words involved, simply by having to do two things at once.

In marked contrast to the crisp, colourful screen display of *Better Spelling*, *Spell!* does not use the abilities of the Amiga at all when it comes to presentation. Colours are bland and unappetising, which distracts while presumably attempting to do the opposite. Letters are displayed in a greatly enlarged font

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Speling is a triky thing and *Fun School 3* helps out just fine. Gender also causes problems sometimes – just look at the wicked queen, ducky.

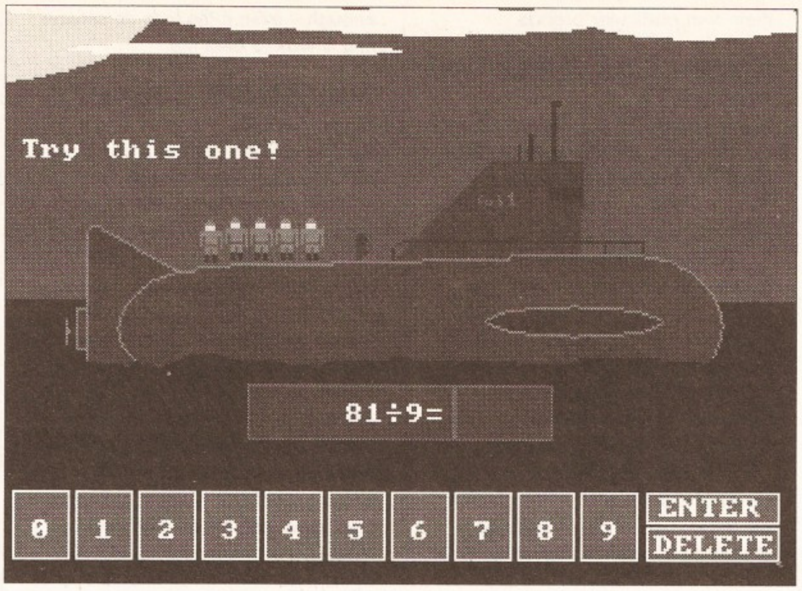
continued from page 97

which relieves the putrid background a little, since half-a-dozen words virtually fill the screen.

As a budget-price offering, *Spell!* certainly has just as much educational value as *Better Spelling*, and with more game variety and the opportunity to add your own word lists, more flexibility. But by releasing the game identically across a range of 8 and 16-bit formats, Database has been forced to place the package's presentation at the bottom of its list of priorities.

MATHS

As with English, junior school children are expected to have mastered the basics of the four common arithmetic functions: add, subtract, multiply and divide. For all the controversy about the irrelevance of drilling in tables, now that calculators are routinely used in schools, children still need a back up should the batteries fail. And although calculator wielding adults are now a common sight in supermarkets, the ability to perform fast mental arithmetic is essential. I've lost count of the number of times I have had to provide the correct figure to a young checkout operator who has punched in the wrong amount. Both the packages described below give the child an opportunity to practise these essential skills.



***Maths Mania* gives maths an urgent edge, as failure to get the right answers will have the submariners abandoning their scuppered sub.**

Maths Mania

Ages 8 – 12

Last month we looked at *Magic Maths*, which covered very simple arithmetic for the infants. *Maths Mania* from the same software house is presented identically, but adds multiplication, division and logic to the child's repertoire.

At junior level children are honing their memory and logical skills, so the first two games of the pack are welcome additions to the drudge of learning tables. First off is *Mind Power* which is a re-vamp of the *Mastermind* game in which a sequence of different coloured pegs must be deduced. This game uses coloured shapes and is not easy.

Rather simpler is *Blast Off* which presents a grid partially filled by coloured shapes. At the beginner level, the child is given several seconds to memorise the positions of the various shapes. Then the grid is cleared and the pattern duplicated by selecting the squares which were occupied before. At the harder level, the child must select both the correct positions and also the correct colour and shape which was there originally.

In addition to memory and logic are three games which encourage basic arithmetic practise. The memory angle is retained in *Sums* which flashes a sum on the screen then removes it after a few seconds. The child must remember the question in order to type in the answer.

For younger children, *Submarine* dispenses with the memory angle by leaving the sum on-screen throughout. A submarine has several sailors on its deck, each of which in turn enters the sub as a correct answer is given. Get the answer wrong too often and any remaining men fall overboard to be eaten by a shark. Hilarious, and it has that touch of urgency which children of this age are beginning to both appreciate and cope with.

Weighing up

The last game, *Scales*, is much simpler and has no time limits or penalties (except in the score at the end). It simply involves balancing a set of scales by providing the answer to the sum in the left hand pan.

Although the games are listed on the menu in decreasing order of difficulty, which seems a little daft, the whole package is a fine example of blending simple graphics with essential drill. Highly recommended for its variety and flexibility.

Maths Blaster Plus

Ages 6 – 12

Most educational software for the Amiga uses the machine's graphic capabilities to present programs that resemble arcade games as much as possible. Thus high score tables are often included, but being RAM-based, they are lost when the machine is switched off.

Maths Blaster Plus is the type of program that could be used easily in schools to record the mathematical progress of a whole class over a period of time. For the child at home, its disk recording option also gives a constant progress check – much more satisfying than having to fill the high-score table every session.

As a maths tutor, this American package takes children through the first six grades (roughly infant to junior) and covers the four basic arithmetical functions together with fractions, decimals and percentages. Unfortunately the presentation is pretty uninspiring and children soon become bored with the repetition.

The first four games present plain screens with oversize numerals offering sums. The sums themselves range from a simple 3+4=? through to the ?+4=7 style. Additionally, there is one animated game in which a screen with several rockets ready for take off also shows a sum. Each rocket is aimed at an alternative answer and the child must stop a

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THE RATING SYSTEM

Here's a run down of how we rate the packages reviewed each month. Some will have a high addiction rating while at the same time scoring low on educational content. Others might score in the opposite direction. The best packages of all will tend to have high scores across the board, resulting in a balanced product which satisfies the child's need to play while not neglecting the prime purpose of the product's existence – education.

Value for money is not considered as a separate item, since different children will find different approaches of more or less use. Those easily distracted will be better off with a very bare package, while avid joystick jockeys will prefer the more animated approach. Also, the age ranges of children in a family will determine the length of time a product will be usable.

Education Value ?/30

How much of the child's time is spent practising old skills or learning new ones. Is the product accurate and consistent in spelling, punctuation, ability level and so on?

Ease of Use ?/30

Is the program easy to load? Can the child control the menus and other options alone? Will the child need an adult's help to read the on-screen instructions? Can the program be utilised in different ways for different subject areas?

Flexibility ?/10

Can different ability levels be set? Will the program adjust them automatically? Can problems and word lists be created by the user for inclusion? Can both keyboard and mouse be used?

Addiction ?/30

Based on the personal reactions of children and adults of all ages and abilities. Is the child's interest held? Can different ages compete together? Is success encouraged without failure demoralising the child? Is it fun to play? Do the children ask for it again?

continued from page 99

constantly walking astronaut at the correct rocket. The rocket then rises to the top of the screen. Wow!

If I sound harsh, it is simply because there are many other programs about at much lower prices that offer far more interest to the children. And if a child isn't interested in a program, she or he will not want to play.

MISCELLANY

Educational software comes pretty expensive, so if you are buying for the first time your best bet might be a package covering a variety of different subjects. Two packages worth a mention in this respect are the *Answer Back Junior Quiz* from Kosmos and the highly acclaimed *Fun School* (over 7) pack from Database. Although entirely different in approach, they offer lasting interest combined with excellent educational value.

The beauty of the multi-topic approach is that children who are new to the computer and are looking for novelty need not become bogged down on one subject, but can flit about and become accustomed to the controls. From the parent's point of view, topics in which the child appears weak can be pinpointed for further work and perhaps a more specialised package.

A source not to be ignored is the public domain, which boasts a wide selection of programs on most subjects, and they won't break the bank either at two or three pounds each. Although PD games don't usually have the depth of commercial offerings, they offer a variety of novel approaches to grab the kids' interest. With *AMOS* now more widely used, many of the PD games are written in the language, and some offer the chance for *AMOS*-owning parents to modify the programs in order to suit their own particular broods.

Answer Back Junior Quiz
Ages 6 – 11

In this age of TV quiz shows and pub quiz leagues, virtually everybody seems to dabble in the pastime of showing off their general knowledge (or in my case lack of it).

Answer Back is a series of quizzes suitable for all ages. The shell is the quiz pack itself, which is supplied with hundreds of questions on all sorts of topics. The question lists are roughly categorised into 15 lists, each of which is stored on disc and can be loaded separately.

The quiz plays by presenting a series of questions from the chosen list. All or part of the list may be chosen and questions cover multiple choice, true or false or find the missing letters. In the junior version, an arcade sequence may be selected which is invoked when a question is answered correctly. This slows the game down rather a lot, but is fun for the kids. Adults playing alone are better off deselecting it.

And the fact that adults can play alone shows the versatility of the system. Many of the question lists contain posers ranging from easy-peasy to virtually impossible. The easier questions are grouped together in the lists and can be selected alone for younger children.

In addition to the supplied lists, further data disks can be purchased for use with the system or, by using a text editor, your own lists can be created and saved on to disk.

Altogether the *Quiz* is a versatile system which is suitable for the whole family and I simply can't recommend it highly enough – even if the kids do always find a way to beat me.

Fun School 3 (over 7)
Ages 7 – 12

As both a first program and a source of continuing pleasure and educational value, the *Fun School* series will be hard to beat.

Six different programs are contained in the package, each of which avoids the dry approach of many competitors by presenting standard school topics in a novel and hugely enjoyable manner. The most conventional program is *Planetary Maths*, which successfully combines arithmetic practice with frantic arcade reactions. Various skill and time levels can be set with ease, making it a firm favourite with all ages. Also fairly traditional is *Word Search*, which displays a grid of letters and a list of words to be discovered running in all directions.

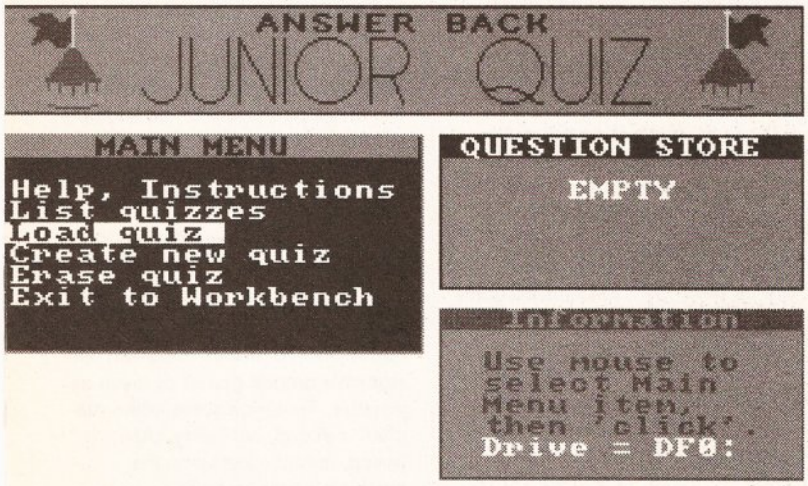
Sentences offers incorrectly punctuated prose for the child to correct. The game also features spellings to be spotted and corrected. *Treasure Search* offers practice in compass directions and distances as the child follows a list of instructions in a bid to find the treasure on a colourful backdrop.

Robot Draw is a well-featured, colour logo drawing program with macros and several examples in the manual to get the child started.

Database is exactly that: a simple, but well-written database in which the child can first practice storing information, then searching and retrieving it.

Interactive fun

While the *Fun School* packs for younger ages tend to offer games which are played in the same way again and again, this pack provides more interaction with the computer for saving masterpieces of drawing and carefully entered data. Despite this, the programs are simple to understand and operate, unlike adult packages which often confuse younger children by their extremely large range of options. AS



Children and grown-ups alike can test their general knowledge without recourse to the pub quiz machine with *Answer Back Junior Quiz*.

Shopping List

MJC Supplies (Ash)
2 The Arches
Icknield Way,
Letchworth
Herts, SG6 1UJ
☎ 0462-481166

MJC offers a wide range of educational software at discount prices. Belated thanks for supplying copies of *Sesame Street* last month at very short notice.

SPELL! **.................................£8.95**
FUN SCHOOL **3 (over 7) £24.99**
Database Educational Software
Europa House
Adlington Park,
Adlington,
Macclesfield,
SK10 4NP
☎ 0625 878888

MATHS BLASTER PLUS **........£39.95**
Ablac Computec Ltd
South Devon House
Newton Abbot
Devon,
TQ12 2BP
☎ 0626 331464

AMOS PD Library
25 Park Road
Wigan, Lancs
☎ 0942 495261

MATHS MANIA **..................£22.95**
BETTER SPELLING **...............£22.95**
School Software
Tait Business Centre
Dominic St
Limerick,
Ireland
☎ 010 353 6149477

ANSWER BACK JUNIOR QUIZ **..£19.95**
Kosmos
1 Pilgrims Close
Harlington,
Dunstable
Bedfordshire,
LU5 6LX
☎ 05255 3942/5406

Checkout

Software	Education value	Ease of use	Flexibility factor	Addiction	Overall
Better Spelling	25	20	5	20	70/100
Spell!	25	20	8	10	63/100
Maths Mania	25	20	5	20	70/100
Maths Blaster Plus	25	20	5	10	60/100
Answer Back Junior	25	20	8	25	78/100
Fun School 3 (7+)	25	25	8	25	83/100

AMIGA SHOPPER

BUYING ADVICE FOR AMIGA SHOPPERS

Whether buying over the phone from adverts in Amiga Shopper or at a local computer store, here's our advice on how to avoid problems

BUYING IN PERSON

● Where possible, always test any software and hardware in the shop, before taking it home, to make sure it works properly.

● Make sure you have all the necessary leads, manuals or other accessories you need.

● Don't forget to keep your purchase receipt.

BUYING BY PHONE

● Be as clear as possible when stating what you want to buy. Make sure you confirm all the technical details of what you are buying. Some things to bear in mind are version numbers, memory requirements, other required hardware or software and compatibility with your particular model of Amiga (that is, make sure you know which version of Kickstart you have).

● Check the price to make sure it's the same as the one advertised.

● Check that what you're ordering is actually in stock.

● Check when and how the article will be delivered and that any extra charges are as stated on the advert.

● Make a note of the date and time when you are making the order.

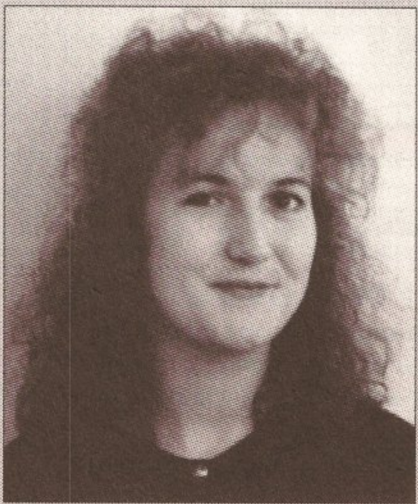
PROBLEMS WITH AN ADVERTISER?

We want to ensure that buying mail order through *Amiga Shopper* is a straightforward, hassle-free experience.

Taking the advice offered on this page will help make it so. But if, despite this, you run into problems – for example, failure to deliver goods within 28 days, without reasonable explanation – we will do our best to help sort things out.

Simply contact our Customer Liaison Officer, **Helen Kennedy** at **Future Publishing, 30 Monmouth Street, Bath BA1 2BW**, or give her a call on **0225 442244 extension 2176**.

Be ready to supply her with details of the advertisement you responded to, the goods ordered and precise details of the problem encountered. She will then do her best to solve your problem. However, please bear in mind that your first contact in any enquiry should be direct to the company you have ordered from. In 99 cases out of 100 they will be able to resolve any difficulties.



Customer Liaison Officer Helen Kennedy will try to sort out any of your major problems with advertisers.

BUYING BY POST

As with buying by phone, you should clearly state exactly what it is you are buying, at what price (refer to the magazine, page and issue number where it's advertised) and give any relevant information about your system set-up where necessary. You should also make sure you keep copies of all correspondence both to and from the company concerned.

MAKING RETURNS

Whichever method you buy by, you can return it if it fails to meet any one of the following three criteria:

● It must be of 'merchantable quality'.

● It must be as described.

● It must be fit for the purpose for which it was sold.

If it fails to satisfy any or all of the criteria, then you are then entitled to:

● Return it for a refund.

● Get compensation for part of the value.

● Get a replacement or free repair.

When returning anything, ensure you have proof of purchase and that you do it as soon as possible after receiving it. For this reason it is important that you check the hardware or software as soon as it is delivered to make sure everything you ordered is there and works as it is supposed to.

HOW TO PAY

Paying by credit card is the most sensible way, whether buying in person, by post or on the phone, because you may be able to claim the money from the credit company even if the firm you ordered from has gone bust or refuses to help sort out your problem.

Otherwise, pay by crossed cheque or postal order, but never send coins or notes through the mail.

GETTING REPAIRS

Always check, when buying hardware, the conditions of the guarantee, servicing and replacement policy, so that you know what level of support to expect. Always fill in and return warranty cards as soon as possible and make sure that you are aware of all the conditions contained in the guarantee.

BUYING PD

Even though buying PD software is relatively inexpensive, you should still apply the same rules of confirming all transactions as clearly as possible and making sure that you keep accurate records of all communications.

Shopping around is still important when buying PD because different houses charge different prices for the same disks. There is no set pricing structure for disks, but bear in mind that PD houses are supposed to be non-profit making operations. AS

See you emulator



"PCs have been common in the business community for a long time, but now the cost-effective Amiga is making inroads. The wealth of PC software has been opened up by PC emulators, but which does the best job? I'm here to find out."

Mark Smiddy

BEGINNERS START HERE

The term PC is an abbreviation for Personal Computer, a term usually associated with machines made by computer giant, IBM.

It suggests that a PC is a computer for use by one person, as opposed to the now old-fashioned, multi-user mainframe computer. In fact, desktop, laptop or palmtop computers, and even your very own grey matter, could be described as personal computers. But IBM coined the term and PC is taken to refer to computers based on IBM's original design, or to other devices that are capable of emulating PCs.

The attraction of the PC lies mainly with the sheer number of programs available for it – everything from games software to CAD, graphics to spreadsheets, and some very heavy and serious scientific applications. With all this exciting software lying around, it seems inevitable that someone would come up with a device to make it run on your Amiga.

This is where the bridgeboard concept comes in. A bridgeboard is basically a circuit board that contains a whole PC. Plug the board into a slot on the Amiga and suddenly you have a machine that operates like one of IBM's finest, opening up the huge wealth of PC software.

Admittedly, performance is not PC perfect, but most programs run with no trouble on the Amiga, making it an even more versatile machine.

Following up on last month's review of KCS's Powerboard, Mark Smiddy puts Vortex's AT-Once PC emulator on trial

As a tester of wonderful new hardware, I am occasionally called upon to risk life, limb, bank balance and an early grave by ripping my machine apart to install some wonderful new widget. This goes with the territory, but it is a shame not every hardware designer chooses to install their gadgets on existing expansion buses. AT-Once is an example of hardware that has to be fitted internally on a machine with no user-serviceable parts. Even so, to get the best out of a particular peripheral, it is often necessary for manufacturers to do this.

Emulated emulator

AT-Once is a PC emulator like the KCS Powerboard reviewed in *AS* Issue 2. Unlike the 8-bit KCS board, AT-Once uses Intel's 80286 16-bit processor and that must surely give it the edge over a measly little 8-bit, mustn't it? There is only one way to find out – out comes the screwdriver and off comes the lid.

Fitting AT-Once, thanks to the excellent, well illustrated, but physically small instruction booklet, is straightforward. Nevertheless, it's anything but easy. (Ease of installation, you may remember, is a major plus for the KCS Powerboard.) Before starting, you will have to open your machine and invalidate the remaining warranty.

Next, the shielding and keyboard must be removed to gain access to the circuit board. Then the GARY (Gate ARaY) chip must be temporarily removed to make way for a small module. Last, out comes the 68000 and in its place goes the AT-Once board. Put the whole lot back together again, boot up with the system disk and you're off ...

At least, that's the theory. Updates to the manual are distributed on the system disk – the ubiquitous read.me file. Read.me files are usually short with a few update notes and this one was brimming with information; some of it on the installation. If you don't have a printer, reading information presented in this way is a real bind, even with *PPMore*, a text-file viewing program. But worse, the first few lines state: "The contents of this file must be read before the system is used for the first time". Time to get worried. Further examination revealed that most of this stuff is supplementary information which you don't need to know right away

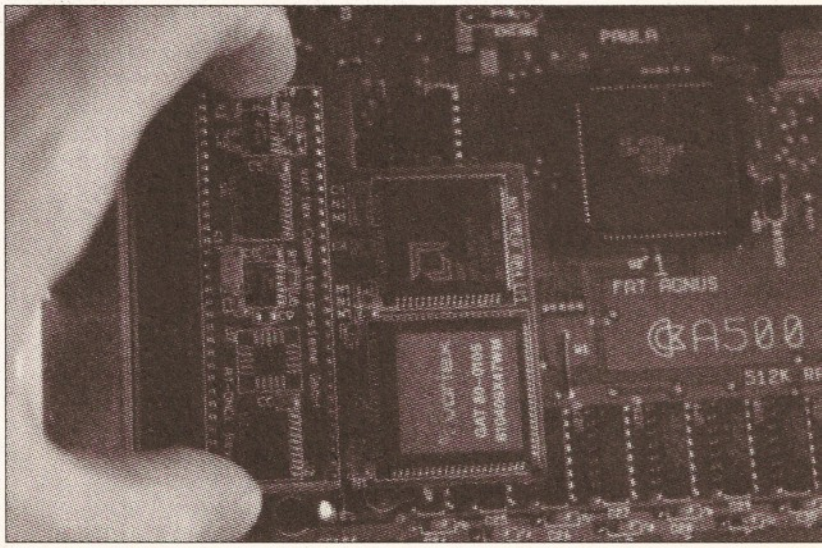
Gazza cries off

First off, they point out the GARY module is not always required. I can live with that, but why wasn't that mentioned before I risked damaging an expensive custom chip? It goes on to say that if the GARY module is fitted, a small percentage of A590s will not work. If you have an A590 it isn't needed in any case.

Soldering on

More importantly, Vortex has recently discovered a problem with AT-Once running on Rev 6a Amiga 500s – recent ones. It doesn't work! This is all explained in great depth with a simple solution. If you have a revision 6a board, simply solder a wire across R106. (Whoa, I thought this was a solder-free upgrade.)

So how do you find out which revision you have? Open the machine and look at the board – the revision number is printed in the lower right-hand corner of the PWB. According to distributor, Silica, some Amigas now have the revision



The compact AT-Once slots in in a straightforward manner, but say goodbye to your warranty as soon as the casing is unscrewed.

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number on a sticker just inside the trapdoor expansion. My test A500 is a revision 5 so the problem does not exist. However, these points should have been made VERY clear in a printed sheet and not hidden away in a disk-based text file.

Also, officially, Commodore is against plugging (let alone soldering) anything inside the machine. A member of the support team I spoke to took a sharp intake of breath and said: "Don't do it, Mark." Help is at hand however. Silica will fit AT-Once for you and do the R106 upgrade if required. But this service costs £34, which bumps up the price of this emulating add-on. If you decide to go ahead anyway, and find you have problems with a 6a board, you might end up going to a local dealer for help. The price for fitting a link is likely to be minimal, but there will certainly be a minimum charge – probably at least £15 or £20.

Belated emulation

Once the thorny matter of installation is overcome, you can start using the emulator – assuming you have already bought MS-DOS. Here we go again: the MS-DOS licence states very clearly you can only use the system on one machine and take copies for backup purposes only. Much the same applies for every version of DOS. It is, after all, commercial software.

Even if you do decide to break the law by using the DOS from your own clone, it cannot guarantee full compatibility. Many clone manufacturers build in checks for their own machines when using a licenced DOS. Calling Silica once more, a spokesman told me: "We have people running things like Olivetti DOS on AT-Once and they expect programs like *FDisk* [the fixed disk setup program] to work."

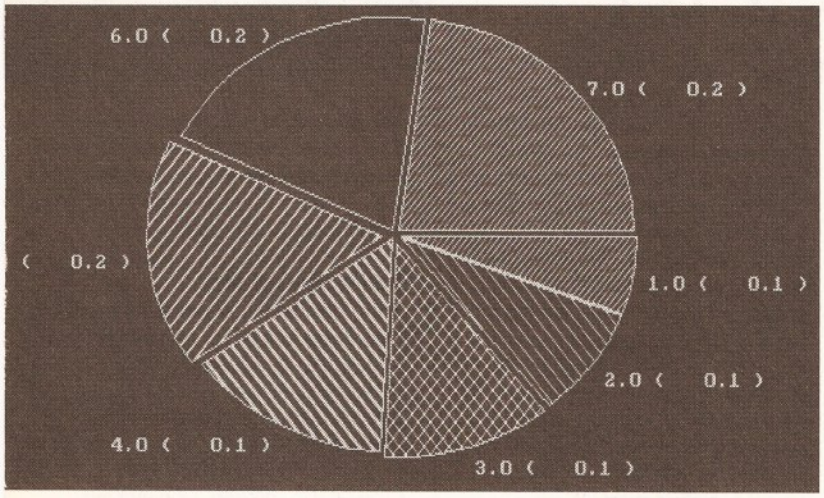
AT-Once is said to work with most versions of MS-DOS, with 3.2 or higher recommended. It is also said that 4.1 is still riddled with bugs, so Silica will supply a copy of Microsoft MS-DOS (not to be confused with PC-DOS) for £59.00. This brings the total cost of the system to a little under £300 – or a third as much again for many users.

Casting these problems to the wind with a sigh, it's time to ask how well does AT-Once perform? The system is essentially a 286-based PC, driven from the Amiga's clock at around 7Mhz and sharing the Amiga's RAM. Therefore, to get the best from it, you will need at least 1Mb RAM and preferably more. AT-Once may run with just 512K but it has to share that with the Amiga – and the screen (PC video cards have their own private memory).

Once the AT-Once is started and DOS is loaded, there is not going to be a lot of room left for anything else. Remember, modern PCs come with at least 512K RAM (most have 640K) for their own use, so most modern software expects at least that. For this test, the system was a 3Mb A500: 1Mb internal; 2Mb external in an A590. Fortunately, the emulation software does allow a wide variety of EMS memory configurations. I used a 50/50 split between the Amiga and the PC side.

Starting the emulator (once it is installed) is as easy as clicking on an icon. (However, beginners will flounder with the icon's internal configuration for controlling the memory model.) Once this is done, the machine does a soft-reset (like pressing CTRL-Amiga-Amiga) and AT-Once starts. This is the really clever part because, in case you hadn't already guessed, the Amiga side is still active. During reset, AT-Once steals memory from the Amiga and configures it for its own use – a brilliant idea.

However, there are several problems with this approach. The Amiga side of things is still running, so the two processors are both clambering for the same hardware. Dual processor systems work very well – look at the Sega Megadrive: games machine or not, it runs a 68000 plus Z80 in tandem very successfully. In the case of AT-Once, there is a serious degradation in performance on the Amiga side even when the PC is idle.



Welcome to the world of PC graphics. However, VGA emulation is still a no-no with the AT-Once until the register-compatible update turns up.

Unnatural idling

Measuring this proved difficult because Commodore's own tool, PerfMon, registered the 68000 as being idle most of the time. This is not natural – even interrupts are being processed, so something is going on. However, when the PC side started an intensive I/O task – accessing a floppy disk – the 68000 showed a sudden increase in activity. It would not be fair to say the Amiga is totally unusable when AT-Once is active, but then again, it's not quite its normal jaunty self. It feels like someone left the handbrake on.

This new version of AT-Once is the first PC emulator to support EGA and VGA screen modes – the original versions only supported CGA and MDA. Since EGA is considered the minimum requirement, this will be a big selling point. In fact, many programs refuse to run unless they can find an E/VGA graphics adaptor. Also, the CGA emulation has been changed to selectively support eight rather than 16 colours – in other words, it's faster.

However, as any knowledgeable PC owner will tell you, the problem is not that simple. Good PC software can change modes from CGA to VGA, if it decides to, by auto-detecting which adaptor(s) are present and then using the best one. This can usually be overridden so you can force the adaptor of your choice.

Just to confuse matters further, EGA and VGA have a number of different modes from monochrome to 256 colours in a wide variety of resolutions. Amiga hardware does not support such a vast range and, in practice, current models can only theoretically support 16-colour VGA in 640x480 pixels. To get that, you

JARGON BUSTING

BIOS: Basic Input Output System - the part of the PC ROM that deals with keyboard and screen handling commands.
CGA: Colour Graphics Adaptator – gives four colours from two fixed palettes in low-res.
EGA: Enhanced Graphics Adaptor. Somewhere between CGA and VGA. Offers a higher resolution and better range of colours than CGA.
EMS: Extended Memory System, or LIM (Lotus Intel Microsoft) EMS - a system enabling an application to use more than the normal PC limitation of 640k of RAM.
MDA: Monochrome Display Adaptor. Text only with three states: off, on and high-intensity.
REGISTERS: For a graphics adaptor, registers are locations that can be loaded with numbers. Accessing the registers bypasses the BIOS and is therefore faster.

BLITS & BOBS

Many people believe that doubling the clock speed of a second processor doubles the speed of the machine. In practice the improvement is likely to be around ten per cent.

AT-ONCE SPEED TESTS

As promised last month, here is a run down of the AT-Once benchmarks compared to the KCS Powerboard. As expected, the Norton Index is faster. However, none of these tests take into account the awful screen handling and tediously slow disk access.

Test	Powerboard	Powerboard Turbo	ATonce CGA 4	ATonce VGA 16
Norton Index	3.6	4.4	6.1	n/a*
V20 Timer	22MHz	29MHz	21Mhz	20Mhz
Relative PC	220%	240%	150%	100%

*** This test was not available because the emulation software crashed during testing, which provides yet more proof that the VGA screen emulation is neither complete nor compatible.**

will need a PAL machine because the American NTSC display supports a maximum of 400 lines.

Emulating a high-resolution graphics display like that requires a vast amount of processor and custom chip time, so AT-Once only supports monochrome EGA and VGA. Good PC software will recognise this and use it, so there is nothing wrong with only two colours. However, an interlaced (flickering) screen is required, which is a dog to work with unless you have a flicker fixer or long-persistence phosphor display.

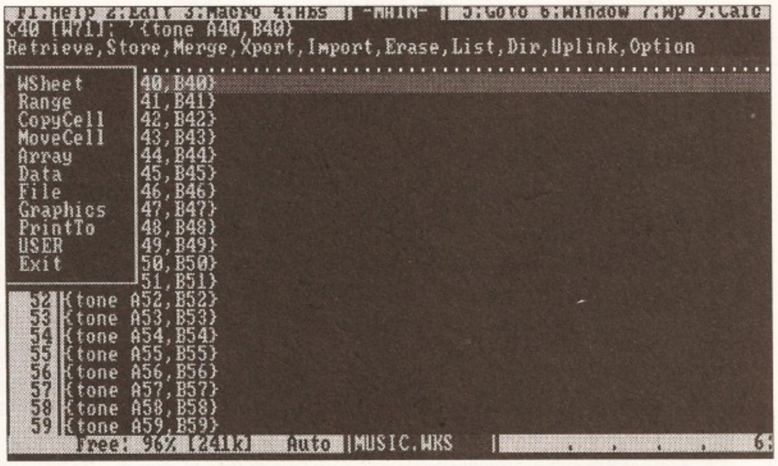
Performance probe

So much for the theory, how good is it? Out come the old faithfuls – *Protext* 5, *As-Easy-As* 4 and *Fractint*.

Protext was chosen for its 43/50 line switch, which uses one of the extra VGA modes. Although the screen tried to flip to 43-line mode, the whole emulation became very unstable. *As-Easy-As* 4 worked fine until it tried to draw graphics. I tried a variety of configurations, but all resulted in failure. At best, the screen was blurred, messy and completely unusable. *Fractint* (a public domain fractals program) worked best. It did manage to get into what looked like a VGA graphics mode, but pointedly refused to draw anything resembling CGA. Previous versions of AT-Once have supported a full 16-colour CGA display for compatibility – unlike the KCS unit which only has eight. This causes the whole thing to slow down, so to bring the emulator more in line with the competition, the number of colours is selectable.

There is also a strange system called DCA – dynamic colour assignment. This is for when a four or eight-colour screen is being used: DCA attempts to guess how many colours are being used. If up to four or eight colours are being displayed by the application, the original CGA palette is used. If more than four or eight colours are called for, DCA switches the palette to the one set up in the installation program. The net result is odd: as the screen is drawn, the palette suddenly throws a fit and changes colour. DCA is as confusing as it is useless, but fortunately it can be turned off.

Disk drives on the Amiga are another thorny subject. Because AT-Once is running, in effect, as another task, the Amiga tries to read every disk you put into the machine. This is a nuisance and has been corrected in the latest version. A swift keystroke prevents the Amiga trying to read MS-DOS disks while AT-Once is active. Switching back to Amiga



Getting PC spreadsheets, or any program for that matter, loaded into your emulating Amiga takes considerably more time than on a real AT.

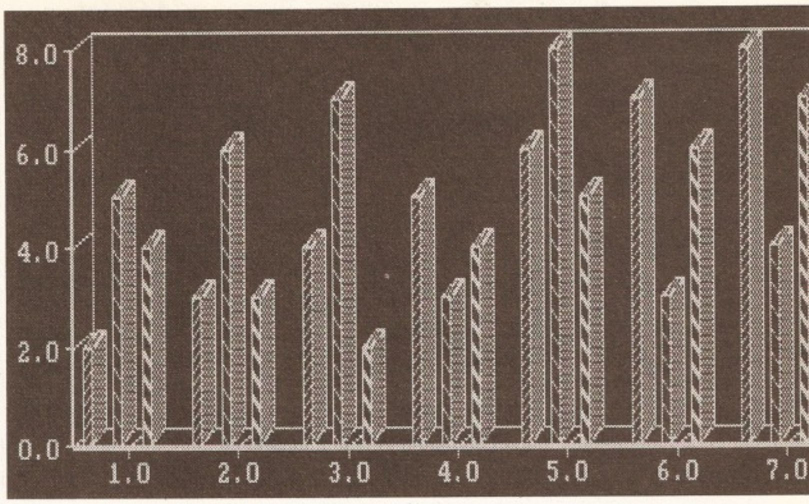
a Mandlebrot set.

With a barrow-load of queries in hand (or in barrow), I contacted Silica's technical support department. They confirmed what I already feared, and what is briefly pointed out in the manual addenda, AT-Once does not emulate the E/VGA registers. However, since the three major (well-trusted) programs I tried all obviously do something AT-Once cannot emulate. The long-awaited VGA emulation was a dummy after all and most users will have to wait for the register compatible update – when and if it arrives.

So that leaves AT-Once with little advantage over the KCS Powerboard, which also emulates mode and the machine complains. Even so, this is a great improvement.

That is not the only problem with the drives though. They are also slow. Take for example a nice juicy application such as *Protext* 5. On an AT clone it takes around 30 seconds to load from a 720K floppy. AT-Once took about 50 seconds. The KCS Powerboard took around 19sec – faster than the real thing and more than twice as quick as AT-Once! Also, like the KCS unit, AT-Once supports both 360 and 720K drives. However, it does not support four drives in the Amiga system.

Things are better on the hard drive front. Because of the way AT-Once works, any drive supported by



Screen update is slow and jerky, and software addressing the hardware registers directly is right out as AT-Once only emulates BIOS calls.

AmigaDOS can be used by the emulator. This is a small consolation but an advantage over the KCS unit which only supports the A590 at present. (That said, support for other SCSI hard drives is believed to be imminent.) However, as I have already said, AT-Once slows the Amiga down – and this means your Amiga hard drive will suffer too.

This means that disk-intensive applications, such as databases and larger word processors, will suffer badly. Many PC database applications are slow enough as it is without adding bigger brakes. Word processors, such as *Protext* and *Word Perfect*, will suffer from the hideous screen update. Spreadsheets will enjoy faster re-calculation thanks to a good CPU, but will be slowed down more by the screen update.

At the end of the day

AT-Once promises AT compatibility and delivers the performance of a slow 286 clone with disappointing screen handling. No matter how many colours are being displayed, the screen update is slow and jerky. The EGA and VGA emulations are said to work with GEM and Lotus, but since it only emulates BIOS calls, any software addressing the hardware registers directly (a lot will) is going to fail at the first hurdle.

AT-Once has one thing over its competition on the A500: an Intel 80286 beating at its heart. Given the implementation, the 286 adds pose value, but the limited amount of software using the extra instructions does little to justify that. It also means, neophyte PC or Amiga owners might be fooled into believing this machine is fast – look at the speed tests. It isn't.

Add to the price the cost of fitting and a decent Microsoft DOS and it gets expensive. Technologically superb and beautifully designed, AT-Once could have been a world beater, but it may turn out to be an expensive mistake. AS

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Version tested: 1.27 (March 1991)

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CHECKOUT

Features....................5/10
Has a 286 and precious little else to show.

Documentation.........3/10
Not the clearest documentation in the world, both in layout and language.

Stability 17/20
Generally OK, but hampered by poor screen emulation.

Compatibility 10/20
Falls down badly with EGA and VGA graphics applications.

Speed 10/25
The processor is fast, but the emulation is sadly not up to scratch.

Price 7/15
Everything is extra – even DOS! Too many hidden costs.

AMIGA SHOPPER 52/100

Disappointing performance from a unit that promised much.

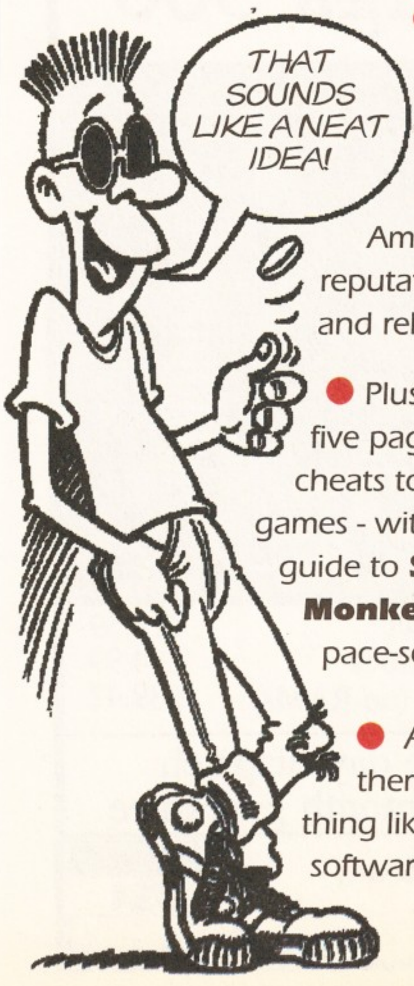
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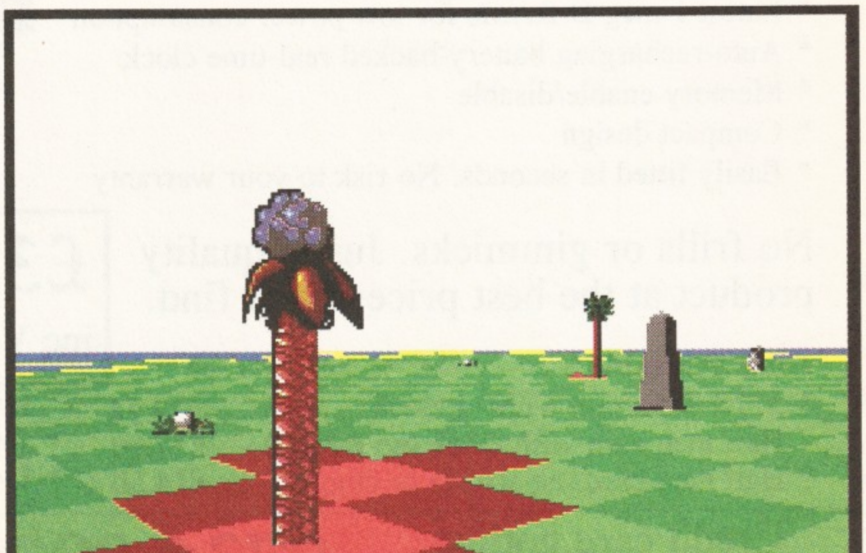


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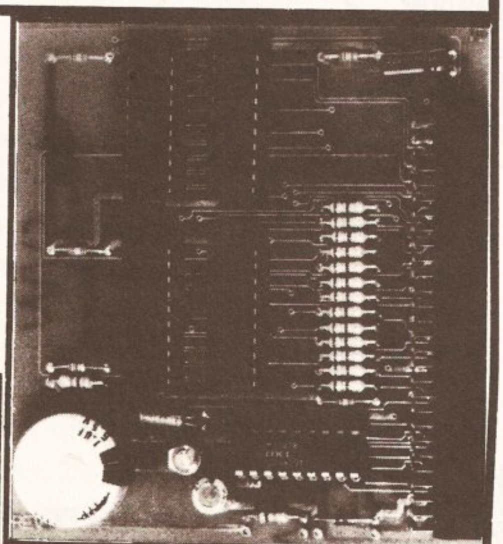
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PC JOYSTICK

Parts for analogue joysticks (the joystick potentiometers) are hard to come by these days, so we can't offer a kit to build an analogue stick from scratch. The parts for the prototype were butchered from old components. However, old PC joysticks are easy to get hold of – and some recent designs are very well made.

The conversion from a PC to an Amiga joystick is quite straightforward, only requiring a simple lead. And for those of you who don't own a soldering iron, we have arranged a supplier of appropriate leads. The joystick used in the prototype was a Suncom Analogue Plus, tested with Domark/Simis' *MIG-29* flight simulator. A similar model is available from Tandy, however, Tandy's own sticks come fitted with a 5-pin D plug which will have to be replaced.

Construction details are not required for this one since it really is just a matter of point-to-point wiring. Just follow the diagrams on the right of the page and you should be up and running in less time than it takes an Amiga to say 'Guru'. Proportional joysticks are notoriously noisy beasts and this means control can get a wee bit hairy at times, but it all adds to the general fun though.

continued on page 113

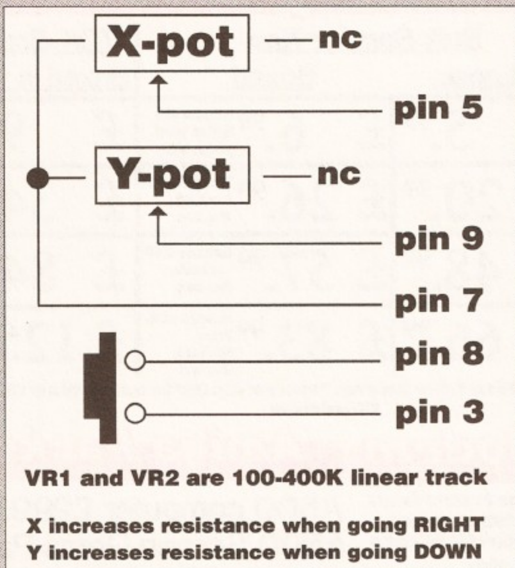


Is your old PC joystick giving you no joy? Then give it a new lease of life by fiddling about with the wiring. Your Amiga will never know the difference.

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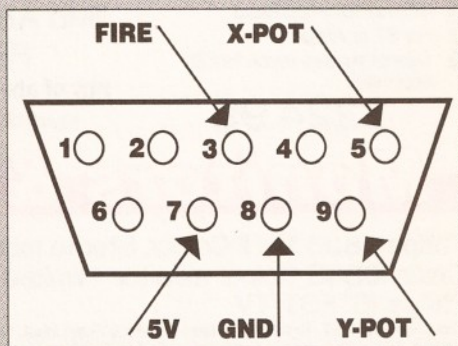
POTS AND PINS

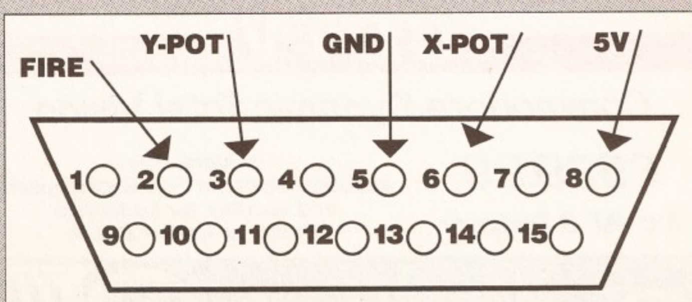


Here's a neat schematic diagram of how the pins relate to the pots in an analogue joystick. And for those of you who don't know what a pin or a pot is, then perhaps you'd better think twice about going ahead with this project by yourself.

The diagram (right) shows an Amiga nine-pin female D plug with the pin configuration for PC stick re-wiring.

Below is a diagram of a PC 15-pin female D plug showing the corresponding pin configuration.





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continued from page 111

CUB MONITOR UPGRADE

As I said in the first part of this series, I do not intend running any design instructions which could end up with one of you cremating yourself. One case is this modification to a Microvitec Cub monitor which allows it to be connected to an Amiga and display all 4096 colours. Cub monitors built for BBC machines only support TTL RGB; or eight colours including black and white.

Anyway, as so many of you have asked for this project, here it is. Instructions are courtesy of Meedmore. The upgrade is not dangerous, but mucking around inside a monitor is something best left to experts. Read everything very carefully before you even consider removing the cover.

1: Switch off at the monitor and leave it off for at least 30 minutes.

2: Switch off at the mains supply, unplug the monitor and wait another 30 minutes.

3: Unscrew all the self-tapping screws holding the rear cover in place and set them to one side. Carefully remove the rear cover. DO NOT remove the countersunk screws at the front/top of the case. Although this affords easier access to the circuit board, it also exposes the most dangerous and fragile parts of the monitor.

4: Locate the main low-voltage circuit board (see picture).

5: Locate link strip marked PL103.

6: The links can be in one of several positions – move them to those shown in the diagram on the right.

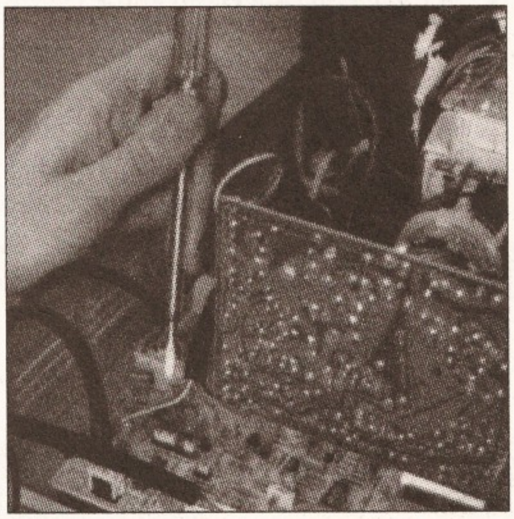
7: Now find link strip TL101.

8: Check the position of the single link and move it if necessary to the position shown on the right.

9: Replace the cover before plugging in or switching on.

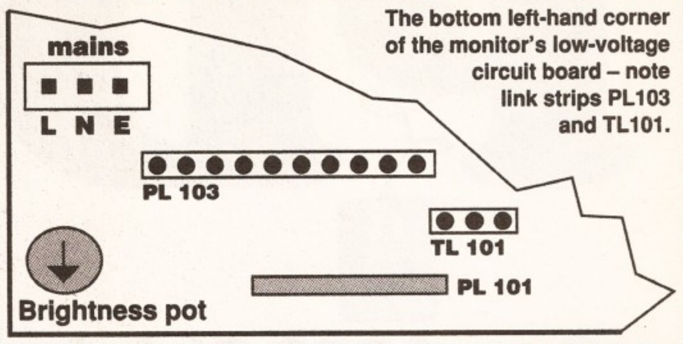
10: Connect the monitor to the Amiga with the lead detailed below right. Meedmore will supply one ready made if you prefer.

11: Switch on and test. The contrast control has no effect on the picture in this configuration. The brightness can be adjusted with the brightness pot. Only do this after switching off as described previously. AS

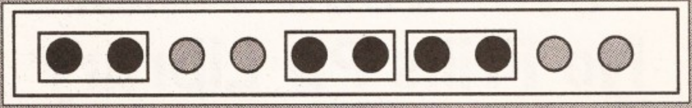


Smiddy's famous screwdriver points out the Cub monitor's low-voltage circuit board.

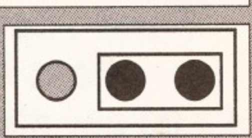
I LINK, THEREFORE ...



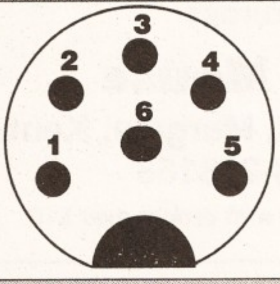
The bottom left-hand corner of the monitor's low-voltage circuit board – note link strips PL103 and TL101.



PL 103 ▲ TL 101 ►



Change the PL 103 and TL101 link positions to those shown in the diagrams.



Making up the the 23-pin D plug to 6-pin Din lead to connect the Amiga to the Cub monitor should be a doddle if you're an expert at fine soldering. Otherwise, Meedmore will be happy to supply one ready made for £9.15.

6 pin DIN to CUB	23 pin D from Amiga	Signal
1	3	Analogue red
2	4	Analogue green
3	5	Analogue blue
4	10	Composite sync
5	16	Ground
6	Not connected	Not used

ELECTRICITY KILLS, SO TAKE THESE PRECAUTIONS

Before removing the back cover of the Cub do the following:

- Switch off at the monitor and leave it off for at least 30 minutes.
- Switch off at the mains supply, unplug the monitor and wait 30 minutes.
- The cover can now be removed in comparative safety.
- Stand on a rubber mat while working inside the monitor – and keep one hand away from the circuit board at all times.
- Replace the cover before plugging in or switching on.
- Repeat this operation even if you have only had the monitor switched on for a few seconds.

THANK YOU LUVVIES, THANK YOU

Thanks to the following people for their assistance in the production of this article: Steve Collins, Meedmore. Staff and pupils of West Redcar School, Cleveland; especially Alan Hickman (Head of Information Technology) and 11-year-old, Sharon who took the photographs while I worked.

CIRCUIT DIAGRAMS

I have had a number of requests for circuit diagrams and PWB overlays for the designs featured in these pages. To answer your questions, I will run circuit diagrams for my designs or if the manufacturer supplies one. Similarly, the PWB overlays are also subject to design copyright and I can only feature them with the manufacturer's permission. This depends entirely on who supplies the kits but I have asked for all current contributing manufacturers to supply the relevant details on your behalf.

SHOPPING LIST

PC Joystick
D15 female with hood: £1.45
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Kit of parts: £6.95

All orders for Cub Monitor upgrade include additional information.

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0.5Meg with clock..............£32.00	3.5" Disk labels.....................£1.50/100
	Amiga dust cover £2.95
	Amiga 3.5" ext drive £58.00

Access

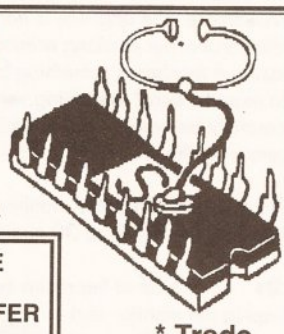
Cheques/PO's to; Redlaw Resources, AMS Offer
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PCU 1202 Red Sector Demo Maker
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FF 397 DKB Trace
FF 415 BBS (Amateur radio)
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( ) Denotes the number of disks
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This is only a small collection of our vast range of Public Domain software. If you have any PD Disks that we do not have we will gladly swap on a one to one basis. We have demos, utilities, business, comms and animation. If you want any PD disk that is not advertised then give us a ring on the above number. Please note to all our customers we now offer a FREE Post service on all orders. Modem users you can E-mail us on Prestel 942521577 or Telecom Gold MIK: 3311. Catalogue Disk £1.00.

Back to life

Terror of the ICs, Peter Jones examines in-depth the ramifications of giving his tired old A1000 a new lease of life with Expert Services' Rejuvenator Board

"The great thing about Amigas with CPU housings separate from the keyboard is that their modular construction means you can upgrade as new bits of hardware come along. Let's see how to breathe life back into an A1000 with a new gadget."
Peter Jones

On examination, the Rejuvenator board appears to be well made; only a couple of resistors and a few jumper wires providing evidence of late modifications. A quick read of the manual, though, made my blood run cold. Installation of the board requires that 124 square posts situated on the mother board, which had held the original daughter board, be pushed through Molex connectors on the Rejuvenator board. Then another 144 pins located on the underside of the board be fitted into the sockets which had held the Paula, Agnus and Denise chips. All at the same time!

Remarks such as: "The Molex connectors are very tight the first time and may take considerable pressure", and: "You will be able to see the gold pins through the connectors once they go in far



enough, so you have a visual clue that they all went in OK" (The flip side is that if one isn't visible then it is probably bent) did nothing to reassure me.

Time to do the only thing possible in the circumstances – call my friend Barry Inskip, a professional computer engineer (hardware and software), and enlist his help.

Disassembly

First, the 256K RAM expansion board is removed from the front of the A1000. Next, the machine must be turned over and five Philips screws, located in deep wells having been removed, turned back again and the top removed by prising loose the retaining tabs on each side. The inside of the lid is a historic document, containing the signatures of all the people originally involved in the development of the Amiga ... not forgetting the cat.

There's a metal RF shield covering much of the inside that must be removed. The front bezel of the case can then be taken off, having first removed the power and drive LEDs, and the disk drive removed.

The daughter board is then ready to be taken off and the manual warns that it might take considerable pressure to come loose. It should also have stated very clearly that pressure should only be applied where there were connectors. It would have been very easy to have snapped off that part of the board nearest to the power supply, with the risk of pins being bent by the shock.

The last stage of disassembly is the removal of the mother board. This needs to be taken out and the RF shield underneath the board removed because the installation of the daughter board requires considerable pressure and the motherboard must sit on a hard flat surface during this operation. The Agnus, Paula and Denise chips can then be carefully extracted from their sockets on the main board using a screwdriver. It's advisable to identify them with a marker pen.

Installation

Because I ordered the new ECS Denise chip and Fatter Agnus with the Rejuvenator, only the Paula chip has to be installed on the new daughter board. Now comes the tricky part of the operation: fixing the Rejuvenator board on the 124 square posts of the mother board.

The posts are held parallel to each other with plastic spacers which need to be pushed further down, since the new board must be seated low enough to connect with the original chip sockets. The manual suggests several ways of doing this, depending on how stiff the spacers are to move, from simply pushing them down with your fingers to heating them with a hair dryer and even spraying them with a lubricant such as WD-40.

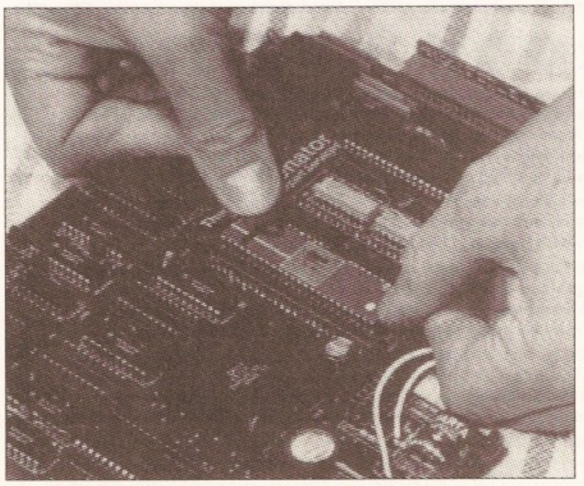
In practice, having found that the spacers would move easily, it's better not to push them down before installing the board, but to let them be pushed down with the board. This means that the tops of the posts are more restricted in their movement by the spacers, and helps locating them in the holes of the Molex connectors.

The next bit is a torment. Trying to line up 124 posts, located all over the area of the board in groups of differing numbers, is not easy.

The next thing is to push the board down on the posts to connect the other 144 pins in the three empty chip sockets. The Molex connectors prove to be stiff and need considerable pressure to penetrate.

Three wires must be connected between the daughter and mother board. These are already soldered on the Rejuvenator and have clip connectors attached to the other end. As two of these have to go inside the

continued on page 116


Fitting the Paula chip in its socket is a tricky business. Care must be taken to avoid bending any of the pins.

Video slot

The manual states that the Rejuvenator comes prepared to run the MicroWay FlickerFixer card in its video slot, adding that it is usually necessary to remove the metal bracket from the end of the video card to enable it to fit under the metal RF shield. I discovered that there is no indication as to which way up the FlickerFixer card should be placed, although logic suggested that it should go component-side up, since the other way meant that it marginally impeded the 256K RAM expansion module at the front of the machine.

Also, it appeared that even with this metal bracket removed, the components would still stand proud of the posts on to which the Rf shield is screwed, preventing it from seating properly.

Assuming the card does fit properly, it would then be necessary to take the picture signal, via a shielded cable, to a new plug mounted on the back of the machine. This would necessitate having to cut a hole in both the RF shield and the plastic case of the A1000.

Here's what you get

Expert services' rejuvenator board is a replacement for the original daughter board of the 1000. It provides the following:

- **a battery-backed clock**
- **an A2000 video slot**
- **a 1Mb Agnus chip**
- **room for 1Mb of RAM in addition to the existing 0.5Mb**
- **a socket to receive a 1.3 OR a 2.0 Kickstart ROM**

The one caveat is that not all 1000s have a daughter board. Much removing of screws and twisting of retaining tabs is needed to find out.

continued from page 115

oscillator box, it's better to remove the clips and solder the wires.

There is one optional connection that can be dispensed with. A jumper on the Rejuvenator is provided to toggle between Kickstart ROM and a Kickstart disk boot-up. A switch, to be mounted on the back of the A1000, and a length of cable comes with the board for attaching to this jumper. The mother/daughter board combination can now be placed back in the case for testing.

Testing

The system is tested with the motherboard retained by one screw in the box and the power supply and disk drive re-connected. The machine is first booted with the jumper at J10 on the Rejuvenator board closed, forcing it to request a Kickstart disk.

If successful, the system can be turned off, the jumper removed and the machine re-booted using the 1.3 Kickstart ROM.

It behaves just like an A2000. The WorkBench 1.3 requester appears on the screen and then the familiar Workbench menu bar and disk icons, with a confirmation that around 1.4Mb of RAM is available.

A quick shift to the CLI and the AVAIL command reveals that indeed this is made up of 1Mb of chip RAM and the rest Fast RAM.

Re-assembly is fairly straightforward, care being taken to see that all the screws retaining the RF shield are replaced

Satisfaction

On the whole, I am satisfied with the rejuvenated A1000. It performs as claimed: as an A2000, and even possesses the ECS Denise chip. But with the downward trend of the A2000 price and the introduction of the A1500 in the United Kingdom, I would hesitate to recommend it as a solution to anyone but the die-hard A1000 enthusiast, determined to retain his original at all costs. AS

Shopping List

Rejuvenator board ..@£450 – £500
by Expert Services,
5912 Centennial Circle, Florence, KY 41042, USA
☎ 0101 606 371 9690

The basic board with a 1Mb Agnus is $419.95, and an extra 1Mb of RAM is $80. A 1.3 Kickstart ROM costs $49.95, and the new ECS Denise chip comes in at $60. Freight (via UPS) adds a further $55. The total bill comes to $664.90, which seems reasonable given the price of an Amiga 2000, but with import duty and VAT, the end price goes over $800 – between £450 and £500 at the current rate of exchange.

Checkout

Rejuvenator board

Documentation 12/25
Adequate. An A4, 20-page manual is supplied, but the fiddly installation of the board could be better explained.

Ease of installation ..10/25
Definitely not for the inexperienced or the faint-hearted

Price 10/20
Unfortunately the price has become unattractive, what with the downward movement of prices for the new machines, such as the A1500.

Features 28/30
Battery-backed clock, 1.3 Kickstart ROM (exchangeable for 2.0 when available), 1Mb Agnus chip, new ECS Denise chip, extra megabyte of RAM, and a video slot. A very impressive set of goodies for the A1000 user.

AMIGA SHOPPER 60/100

A good upgrade for the A1000, but will probably attract only the dyed-in-the-wool A1000 enthusiast.

JARGON BUSTING

CHIP RAM: This is the area of the Amiga's memory directly accessible by the custom graphics and sound chips. Originally a maximum of 512k, newer machines fitted with the fatter Agnus graphics chip can access 1Mb, allowing smoother animations and more screens to be displayed at once. The new Amiga 3000 comes with an Agnus chip capable of addressing 2Mb of chip ram.

FAST RAM: Any extra memory which is not chip RAM. The custom chips cannot access it, and because such accesses to chip RAM can block out the central processor and slow down its own accesses, fast RAM is faster.

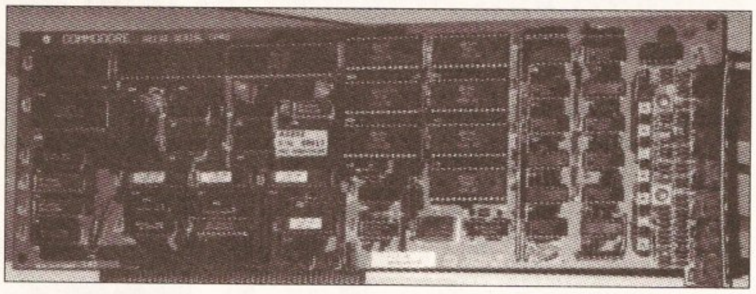
FLICKERFIXER: A card that plugs into the A2000's video slot and removes the flicker from the Amiga's interlace mode and the visible scan lines in the non-interlace mode. Interlace mode is the Amiga's way of doubling the vertical screen resolution by halving the screen update rate, which creates flicker.

KICKSTART DISK: Kickstart is the most basic and central part of the Amiga's operating system. These days it is held in ROM, so that it is immediately present when the machine is switched on. A1000's have Kickstart on a floppy disk meaning that, on powering up, this disk must be inserted before the Workbench disk.

PAULA, AGNUS, DENISE: These are the Amiga's custom chips, responsible for animation, graphics and sound. More powerful versions of Agnus and Denise, known as the Enhanced Chip Set or ECS, have recently been released to allow the use of more memory in graphics and sound applications.

New port

Peter Jones deals with Big C's new A2232 multi-serial port card



The Commodore A2232 multi-serial port card for the Amiga 2000 and 2500 adds extra serial ports to the existing built-in port, enabling connection of multiple terminals. This provides what Commodore calls 'true multi-user capability'.

Since up to five of these cards can be installed in one Amiga, one could have up to 36 users. I suspect that in such a case, response time might be a trifle slow as the poor little CPU would struggle to keep up.

The card occupies an expansion slot and provides seven serial ports, accessible from the back of the computer. As it is impossible to fit the normal 25-pin D-connectors, these have been replaced by 8-pin mini-DIN ports. Seven cables are provided with mini-din connectors at one end and a DB25 plug at the other.

An accompanying floppy contains software to install the card and a communications program, *AmigaTerm*. The install program puts a new version of the serial.device in the system, one that can handle the extra serial peripherals. A new version of Preferences is also transferred, with an option enabling any of the eight serial ports to be set as a default. Other updated utilities are Aux-handler, for adding extra terminals, and Port-handler.

Jumpers are provided on the card for each port, which can be set to reverse the transmit and receive lines.

I was able to connect a Casio CT-670 keyboard via a MIDI Master interface to the original serial port, a Miracle WS3000 modem to the first A2232 port, the interface to a Psion Organiser to the second, and an Epson MX-82 printer to the third.

I used a music sequencer to play back to the keyboard, while at the same time logging on to the Genie network in the United states, printed text from the word processor and saved the diary information of the Psion to the hard disk. And it all worked quite nicely.

Get sociable and hook up your Amiga to others with the A2232.

The next project is to fit a null-modem cable to connect an A1000 to a A2000 and allow access to hard disks and printers. I'll bring you results soon.

The A2232 card is a useful extra for the A2000, given its multi-tasking capability, which enables it to take advantage of multiple peripherals. AS

Shopping List

A2232 card £217.38

by Commodore Business Machines
1200 Wilson Drive, West Chester, PA 19380
USA ☎ 0101 215 431 9100

Call Commodore UK on ☎ 0628 770088 for details of your local supplier

Checkout

Multi-serial port card

Ease of installation ..23/25
Simplicity itself. On the software side, it is just a question of replacing the old Preferences, which allows you to select which of the serial ports you wish to use.

Documentation 20/25
Small manual, but all the necessary details were there.

Usefulness 23/25
Great peripheral to add to the Amiga. Could be a boon to BBS SysOps.

Price 23/25
Excellent value. I have seen American third-party products offering only two or three ports for a similar price.

AMIGA SHOPPER 89/100

Well done Commodore for this one.

FOR SALE

Juki 7100 24-Pin Dot Matrix 288cps colour graphic printer 136 col, 16 inch width printing. Too many options to tell, plus Juki Tractor unit 6371 £400 ovno. S Tindell, 2 Richmond Place, Lowestoft, Suffolk. NR33 0EW. ☎ 0502 514648.

Amstrad CPC 464, Green Monitor TV Adaptor, over 100 games, utilities including music, graphics Etc., over 40 magazines, very good condition, sell due to upgrade. £250 ono. Mr. B Spooner, 16 Kerrsland Cottages, Hurtmore, Godalming, Surrey. GU7 2RN. ☎ 0483 428948.

Amiga 500, 0.5 Mb board, Dragons Lair Trilogy, plus £400 software. sell whole or separates. Call Robert ☎ 081 464 9280 days, 081 460 5500 evenings.

Commodore 64C, 1541C disc drive action replay cartridge, 80+ games on disc and tape, all for £120 ono. will split. Call Sam Leach, ☎ 0462 685100 after 7pm or at weekends.

Commodore Amiga A500 computer with workbench and kickstart V1.3, and all operating manuals plus high quality external disk drive. Very good condition. Price £250. R.A Salmon. Tel. (0268) 772144.

Magazine back issues. ACE issues 1 and 2 £5. C. User August '85, May '86 to Aug. '88. Thirty issues £15. ZZAP! 60 issues £20. TGM 1 to 21, £15. For more details Tel. A.Sobryan, (081) 560 6116.

Pagesetter 1.2. orig. with manual plus 3 discs PD Clip Art and collection of 26 Fonts. £15. Call Mr. K. Holland (0929) 462634 after 6 pm.

Sega Megadrive (PAL), Joypad plus Tatsujin and Super Shinobi. Hardly used. All for £115. Phone David on (081) 748 0550.

Amiga Graphics Sculpt 4D full package. As new. 'Nuff said! £170. Turbo silver latest version boxed. £60. can deliver Humberside. Phone anytime. Mr. P. Mcintyre. Tel. 04698 559. Works 0469 577688.

AT Bridge Board 5.25 1.2m floppy Dos 3.3 with manuals. 6mth old boxed. £425. Phone Mr. P.R. Boucher, (0705) 830 281 weekends .

DIGI View Gold 4.0 with Panasonic B+W camera and cables. Very good condition. £200. o.n.o. Phone M PR Boucher. (0705) 830 281 weekends.

Epson RX.80 printer and 2 brand new printer ribbons included. £95. X CAD designer (CAD) £50. Quartet (music) £20. GFA basic V.3. £35. Hisoft basic and Debugger £45. Guppy, 92 Frishville Gardens, Shepherds Bush, London. W12 25W. Tel (081) 742 9106.

Amiga Mini Genlock with instructions £60. No offers. Used twice. Das Morgan, Three Acres, Egerton Road. Charing Heart, Ashford, Kent. TN27 0AX. (023371) 2886.

SAS/Lattice C. V5.1 Development System. £150. phone for explanation!! Devpac V.2 with 2 books £30. Maxiplan plus spreadsheet V.1.8g. £50. Phone Simon. Evenings. (0734) 443498.

Amiga 500, 1 MB, external disk drive, Dot Matrix printer, Word Processor. Other games only £350. What a bargain! And no VAT increase! Phone (0444) 241796. Ask for Richard.

Cheap software, Mid-Winter £8, Amiga logo £15, BBC Emulator £15, Corporation £8, Their Finest Hour £9, Sim City £8, Operation Stealth £8, Dungeon Master £8, Tel. B Vincent, Stevenage (0438) 355936.

For sale! Devpac 2 assembler and Debugger program. £25. for 2 disks and manual. New and hardly used, excellent value. Contact Daniel on (081) 656 9607 after 6 pm.

Philips TV tuner with telescopic aerial - AV7300. It converts colour monitor (CBVS) into 12 channel T.V. unwanted present so unused except for testing £30. ono. Tel. C.E.J. Burman. (0962) 852942 after 8.00pm.

1 Meg memory expansion for A100 £95. ono., also 40 Meg drive plus SCSI interface for A1000 £195. ono. FJ Briggs. Tel. 0602 216777.

Unwanted gift. Genuine software "Red Storm Rising". Unused and still wrapped in original box. Will sell for £l5. Mr Barry Evans, 14 Nevill Street, Tunbridge Wells, Kent. TN2 55A

Amiga games for sale, Over the Net and Wings of Death. No Boxes but are original. £6. for both. No splits. Wings of Death needs monitor. D Plant ☎ 021 472 3916

Amiga A500, 1MB 2nd disk drive ,CM8833 monitor ,Joy stick , Wordperfect DPAINT3, Superbase 2, other games and software, only £650. the lot . (No split). Call Phil on (0438) 722 303.

Enjoy stereo sound from your Amiga with these speakers powered by the computer from the serial port. £18 ono. Tel. Rob on (0222) 619807.

Epson LX-80 printer, boxed, manual, friction/Tractor. Fitted intelligent serial interface board, 8k buffer, switchable parallel serial, separate manual. £1120 ono. ☎ 021 354 6037. Will deliver Midlands, otherwise buyer arranges collection.

ICL-OPD/ Merlin Tonto. 15" colour monitor, self-contained modem and telephone with Auto-dialling directory. Psion business Rompack and messageing module, complete documentation and handbooks. £220. ono ☎ KP Slow, Luton 0582 33001

Amstrad SM2400 modem complete with Amiga software and large list of free bulletin boards, still under warranty £170 ovno. Queries answered. Phone Danny (0692) 402927.

Citizen Rod Minder for sale as new, boxed £50 ono. Tel. Nicholas Grew, (0902) 746504.

High speed Eurolink modem 2400. Unwanted present August l990. Cost £260. Not used. Will take £200. No offers. Tel. T.R. Gainford (081) 340 0329.

Spectra video joypads. 2 infra red wireless joypads plus receiver plus leads plus re-chargeable batteries, hardly used. £35. ono. Colin Magner ☎ 021 472 1543 (eves)

Amiga 1500 still under guarantee with soft ware, loads of games. £600. no offers. (Platinum works) Deluxe, Paint 3, Populous, Sim City, Battle Chess, Their Finest Hour, Nick Off. N. Alexander Vessey, 10 Heathercroft Road, Shotgate, Wickford, Essex. SS1 18YA Tel. (02768) 561309.

512k Ram + clock expansion card, disable switch, £25, 60-64! C-64 emulator for Amiga. Also original Amiga and C-64 software, boxed. Central London. Tel. Javier Sanz. (071) 828 4755.

Metnet Triangle Multi User BBS 1000+ files, Numeroid interest areas, Techline, coders, fun, games, continually developing system, Starnet, Amiga based. Dial(0482) 473871, 442251, 449028. Jonathan Witty. Already over 4000 calls this year!

For sale, Amiga A2000 x T Bridge Board + 5.25 drive. £160 o.n.o. B.H. Boswell, 164, Bell Lane, Kitt Green, Orrell, Wigan, Lancs. WN5 0DA. Tel. 0942 213402. After 8 pm.

Boxed Sam Coupe for sale inc. all leads, 2 manuals, 18 speccy games, latest ROM. £100. ono. Buyer collect. Rivals Atari ST brand new condition. Mark Tobin, Lynton House, LWR. Workingham Road, Crowthorne. RC11 6BT. ☎ 0344 774080.

Cortex 8 Meg Ram Expansion for A500 £250 o.n.o. 3.5 RF302 disc drive £45. ono. Star LC24-10 printer £145 ono. Video caption designer V1.43 £145 ono. Guarantees for 10 months. Bargain. Mr. Melville Carrie, 2 Browns close, Pittenweem, Fife, Scotland KY10 2QF. ☎ 0333 310680.

Amiga and Amstrad software, singles, books and many computer magazines. eg. Ace, Zero, Your Amiga, New Computer Express. Contact Andrew Wong, 10 Gerllan, Tywyn, Gwynedd. LL36 9DE. Tel. (0654)711 122

A500 console unit (Kontax computers version), colour co-ord, also hides cables and 2nd drive, mint condition. £28 inc. postage. Write to Peter, 42 Brightfield Road, Lee Green. :London. SE12 8QF.

Casio CT640 Stereo key board, MID. in out thru, full size keys, Drum sequencer, 465 sounds, good solid stand, Transformer, P.C.M. voices, full automatic rhythm and drum patterns £120. Mr l Baron, 4 Rossall Close, Fleetwood FY7 8JL. ☎ 0253 872805.

For sale Sword of Sodan, Operation Thunderbolt, Yogi's Great Escape. Wrath of the Demon Dragons Breath, Shadow Warriors, Roger Rabbit, Hong Kong Phooeye. £10. each. Stephen Field, Spring Field 222, Hermitage Road, Saughall, Chester CH1 6AE. ☎ 0244 880019 after 4pm.

A590 with 1 MB Ram £220. Call Simon on (081) 959 6239 (home), or (071) 439 4242 Extn. 2460 (work).

Amiga 500 with TV modulator, extra 3.5 disc drive, Epson Lx800 printer, £300 + software, discs, joystick, manuals and magazines etc. All for £500 ono. Marc Nicholls, c/o 44 Bramshaw Rise, New Malden, Surrey. KT3 5JU. Tel. (081) 949 6992 (after 6pm.)

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All items in very good condition Kind Words £20. Hisoft Basic £30. Hisoft Extend £7. Delivered. Write to Nigel Nock, Welland House, Welland Buildings, Caerphilly, Mid Glamorgan. CF8 2AP.

Speedking Joystick 2 months old. Fantastic condition. Hardly used. Still in box provided. £7. o.n.o. Shop price 10.99. Mark Goodwin 5 Ash Close, Kidlington, Oxford, OX5 1ER. Tel. (08675) 6395 between 6 pm. and 10pm.

Fighter Bomber £10, Shadow Beast £10, RVF Honda £10, F-29 Retaliator £12, D-Paint 3 £30,plus other originals for sale or swap graphic programs, Why? Mr. A. Pearcy, 1, Haynes close, Tuxford Newark, Notts. NG22 0JA. Tel. (0777) 870340.

Action replay MkVI for CBM 64/128 unopened and in original box. offers to Arash (071) 602 4396. Master sound for Amiga only £31.99

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Rendale 8802 Genlock c/w custom switch box £95. Perfect Vision Digitiser. Colour and frame grab features £85. Mr. D. Howarth, 18 Penrith Avenue, Sale, Cheshire. M33 3FN. ☎ 061 973 4646 evenings.

Amiga Action freeze frame cartridge MK11 with manuals Etc. Immaculate condition £40 ono. Mr PS Winter, 7, Wentworth Drive, Aquaduct, Telford. TF4 355. Tel. (0952) 592302.

Falcon for the Amiga in immaculate condition £12. Mr. P.S. Winter, 7, Wentworth Drive, Aquaduct, Telford. TF4 355. Tel. (0952) 592 302. Evenings. Photos Paint 2 for sale. Immaculate condition with manual. £25. Mr. P.S. Winter, 7, Wentworth Drive, Aquaduct, Telford. TF4 355. Tel. (0952) 592 302.

A500 V1.3, Fatter Agnus Chip with 2nd drive just £295 ovno. Wanted XT Bridge Board for A200. Ahmad Alam, 232 Seymour Grove, Old Trafford, Manchester. M16 ODY. Tel. (061) 881 5663.

Amiga A500 1 Meg 1.3 second drive, complete boxed as new. £325. o.n.o. include new boxed software. Nigel R Parr, 9 Manvers Road, West Bridgford, Nottingham. NG2 6DJ. Tel(0602) 452242.

DS/DD 3.5 inch Disks only 40p each. All 100% error free. Phone Phil on (0602) 726469 or Jason on (0602) 724228.

Drum machine 16 pcm sounds. 30 demos, pad assign, midi power supply, size 17" x 10" x41" . Free stereo radio cassette recorder and record deck , detachable speakers. Bargain. £75. Javid Iqbal, 29 Delaval Terrace, Northumberland. NE24 1DL . Tel. (0670) 365151.

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Two Cumana external drives. £40. Two power external drives. £35. 512K Ram expansion £20. Mastersound sampler. £20. music x with midi interface and leads. £65. V.G.C. Tel. Tom (0423) 734083.

My lovely shareware collection 700 disks with all types of software. Demos, music, utils, games from different libraries. Ideal for starting a library £375 the lot. Tel. Tom (0423) 734083.

Kindwords. £25. Perfect Sound (latest) (A500/2000). £35. Director. £15. Carrier Command, Defender of the Crown, Karate Kid 2 £15 Mr. T. Leighton, 6a Bath terrace, Tynemouth, Tyne and Wear, NE30 4BL

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CBM64 and Amiga stuff for sale. CBM64 sound sampler £10. Amiga games all under £15. New games, many other CBM64/Amiga extras! SAE to J Smith , Maplecroft Crescent, Sheffield S9 1DN.

Database. Superbase Professional 3 as new, with data editor, forms editor, fast database language (DML). RRP £249 now £75 as V.4 released. Cash only please. Buyer collects. Mr. I.A. Watson, Flat 7, Thornleigh Court, 37 Woodbury Park Road, Tunbridge Wells, Kent. TN4 9NQ. Tel. (0892)510015 /ext.256. (Ian).

A 590 Hard Drive, 2 Meg Ram £275 ono, protext 5, works, quarterback, home accounts, offers! Malcolm Gault, Hawthorns, The Street, Lea, Malmesbury, Wilts. SN16 9PA. Tel. (0666) 823752. Evenings.

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Amiga games, Drakhen, Treble Champions, £5. each. Edition one compilation £8. All boxed. Back issues NCE, Amiga Computing, Amiga User Etc, 65p-£1.10. includes postage. Tel. AH Foster (0703) 676949 After 6.30pm.

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Amiga Hardware. Microware Flicker Fixer and Zenith SVGA Multisync monitor, VGC, cost £650, sell £395 ono. Ultimate Amiga display, to be seen to be believed, R Kleinsmiede, ☎081 553 2137. Evenings.

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Issue 3

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Sam Coupe 512k computer with 3.5" drive. Ideal for beginners any age. Price around £250. Lots of accessories. Phone Mark Woodstock for more details. (0727) 55585.

Spectrum 48/128k games for sale. Lots available all at cheap prices. Phone Mark Woodstock for more details. (0727) 55585.

Amisonic disk magazine for newcomers to music making, sampling and programming, SFX and MIDI. Send blank SAE for free debut issue. John Ransley 3 Berry close, Telscombe Cliffs, East Sussex BN10 7DW.

WANTED

Citizen 1 20D Parallel interface and lead for Amiga 500 will buy or Exchange for serial interface and lead. Perfect condition. Geoff Willett, 45A Weir Pond Road, Rochford, Essex. SS4 IAH.

Amiga Viruses for Public Domain documentation prog. Send to Wayne "RookeryNook", London Road, Little Clacton, Clacton on Sea, Essex. Disks and postage will be returned.

Amiga 0.5 Meg Upgrade and Printer. Tel. Danny (081) 806 0189 After 7.pm.

Balance of Power I990 will swap Football Director II and Back to the future 2. Jeff Rogers, 9 Laing House, Martley Road, Oldbury, Warley B69 1ED. No codies thanks.

For use by disabled person. Produce A Paper For Disabled. Urgent need for scanner for Amiga 500 also would like cheap desk top photo copier please. A.S. Kerr, 24 Buckland Road, Newton Abbot. South Devon. TQ12 4DH. Tel. (0626) 55835.

Activision Shanghai on 3.5 disc Amiga. Please phone Mr J Roberts (0533) 640599 with price.

Wanted, RGB Splitter for use with Vidi Chrome. Tel. Steve on (0702) 541794.`

Wanted, Amiga A500 any age, also original Amiga Swag, any title, any age.. All must be cheap. Anything considered. Mark Williams, 11 Halls Road, Crosskeys. NP1 7FQ. Tel. (0495) 272092.

Amiga 1 MB wanted, with or without software. D. Kozul, 3Y2A Bath Road, Hounslow, TW4 7HW. Tel. (081) 570 9955 daytime.

Amiga graphics artist required for games finished but without artwork. Must be reliable. No time wasters please. Ring Michael Hughes, weekday evenings. (0895) 37780.

Currently compiling PD collection. Swap my list for yours. Over 400 PD's. Send to C. Cheung, 32, Meadow Terrace, Herrington Burn, Houghton Le-Spring, Tyne and Wear. DH4 7AF.

PERSONAL

Swop your Amiga software and games for mine. Send your list plus SAE to Nick Greengrow, 50, Pilley Crescent, Leckhampton, Cheltenham, Glocestershire. GL53 9EJ. (No Pirates)

Amiga owner, Amer Butt. Please call "TAK" 061 876 5640, have urgent message for you. Reward for anyone passing this message to Amer.

Amiga/Amos contacts wanted Harrogate area. View to starting a club? Locally interested phone or write to Vince Moody, 7 Woodlands Rise, Harrogate, North Yorkshire. HG2 7BD.

Amiga owner (male) seeks tasty female between 19 and 20. Preferably around the London area. All letters answered. Write to: Yusef Osman, 287, Upland Road, Dulwich, London SE22 ODN

MIDI user, male 25, with Kawai K1, Amiga, Music-X wishes to exchange patches, files, tips, music, etc. with beginners and experts. Andy Kyle, 8, Adam Close, High Wycombe HP13 6BY.

FANZINES

New Amiga Fanzine Amiga Ultra. 35 pages full of news reviews and previews with cover disc and all for 99p. Please send a SAE and 99p to, Matthew Dagger, 4 Albert Road, Grapenhall, Warrington. ☎. (0295) 73595.

Jean Michel Jarre new high quality magazine on the Fremm keyboard king. A definite must for all Jean Michel Jarre fans. Ajay ☎ 081 907 4166 Fax 907 0305.

Amiganaut Disk Fanzine, issue 1 out now P.D. utilities, demo's, news, reviews, games, competitions, everything! Only £2.50. for 2 disks. Order now! N. Gilling, 1 France Furlong, Great Winford, Milton Keynes, Bucks. MU14 5EH. Tel. (0908) 690 333. Ext. 2774 (9-5).

What's the difference between a giraffe and issue one of micro mag? Easy, you can't buy a giraffe for only £1.00 from L.Cressey, 28 Sterling Road, Sittingbourne, Kent. ME10 1SL.

The Amiga helpline is free!! Young or old and got a problem? Send a SAE to: AHS. G. Keenan, 21 Skirsa Place, Glasgow. G23 5EE. (Not trade).

● USER GROUPS ● USER GROUPS ● USER GROUPS ●

Amiga Users Klub, Windsor House, 19 Castle Street, Bodmin, Cornwall, PL31 2DX.
Meets every Friday from 6.30-9pm, with a view to expanding members' knowledge of Amiga computing and helping anyone with hard or software problems. Contact Jack Talling.

Amiga Witham Users Group, 85 Highfields Rd, Witham, Essex CM8 1LW
Distributes tips and Basic programs. Keith Anderson ☎ 0376 518271

Basic Programmers Group, 68 Queen Elizabeth Drive, Normanton, West Yorkshire, WF6 1JF.
A group set up to encourage the use of Basic, exchange ideas and assist those beginning with the language. A free newsletter can be got from Mark Blackall ☎ 0924 892106

Chester-le-Street 16 Bit Computer Club, Conference Room 2, The Civic Centre, Newcastle Road, Chester-le-Street.
The club meets every Mondayfrom 7.30-9.30pm to see each other's software collections, exchange advice and tips. Contact Bob ☎ 091 2653671.

Club Amiga, 5 Bowes Lea, Shiney Row, Houghton Le Spring, Tyne and Wear, DH4 4PP.
Membership costs £5 a year for a newsletter, PD software and a 24-hour telephone helpline service. For more info send a SAE to Chris Longley.

Independant Commodore Products Users Group, Biggin Hill Library, Church Road, Biggin Hill, Kent.
Meets most Thursdays from 7.45-9.45pm. There are lecture nights and open nights where members can get help. Contact John Bickerstaff after 8.30pm ☎ 081 6515436.

The Penine Amiga Club, 193B Oakworth Road, Keighly, West Yorkshire, BD21 1RE.
Offers free membership, free advice, and circulates a newsletter.
Contact Simon Booth ☎ 0535 600437.

Slim Agnus, 115 Brocks Drive, North Cheam Sutton Surrey, SM3 9UW.
Meets on the last Thursday of the month. PD library, bulletin board, advice from Amiga experts. Contact Philip Worrel.

Software Exchange Service, 13 Bournville Lane, Stirchley, Birmingham, B30 2JY
Offers a forum for exchanging old, unwanted games at a a small price.
Contact Michael Pun☎ 021 4597576.

Software for free

Phil South takes his gung-ho monthly journey to the Public Domain and comes back with a reet big stack



"You don't have to spend a fortune to amass a huge software collection, and I can show you where the cheapest programs are to be found."
Phil South

BEGINNERS START HERE

Software for free? This may sound like a calling to piracy, but Public Domain is software is free to anyone. There isn't a catch, unless you count the fact that there's so much PD software on offer that it's hard to choose what to have. But that's where I come in.

The Public Domain concept is borrowed from the early days of mainframe systems, when enthusiasts (called 'hackers' then, before the word had connotations) produced programs and distributed them to their friends and fellow hackish-types, asking for no payment but the glow of being recognised as a truly hackish coder. The copyright was waived by the author, and so the program was said to be in the Public Domain – that is to say, any member of the public had a right to copy and use the program however they wished, provided that the author's credit and documentation was distributed with the program.

Since then, PD has grown through the use of Bulletin Board Systems (BBSs) – see our regular comms column for more details.

PD is good, hard currency, and you've only got to log on to a BBS (or buy a disk or two from a PD house) to find out how much fun swapping and collecting it can be. PD is not so much a hobby, more a way of life. _For more on what PD is all about see our jargon busting extra on page 123._

DEMOS

SYSTEM VIOLATION

A bumper crop of Demos this month, leading with *System Violation* from the Anarchy crew (17 Bit 882). This is a stonkingly good demo, featuring some very classy music and containing some of the best graphics I've seen on a demo for a while. As usual, it's not the graphics you draw, but the way you move them around that makes for good presentation. And having sounds which coincide with the graphics is good too. The demo starts with some HUGE bob vector shapes and then does some very neat tricks with starfields, making them into sort of diamond-shaped clusters. Lovely to watch. Then there are some nice 'flags' waving in the breeze, made up of tiny bobs, followed by some crazy copper lines which wave around the screen like the *Sons And Daughters* title sequence ... not that I watch that at all, oh no. Then one of the most impressive bits appears – tiny star-like dots mapped onto the outside of transparent balls bouncing across the screen. A glorious effect and one for the notebook. I haven't the slightest idea how they did it, but more power to their assembler.

Value for money 9/10

MAGICIAN ANIMATION 2

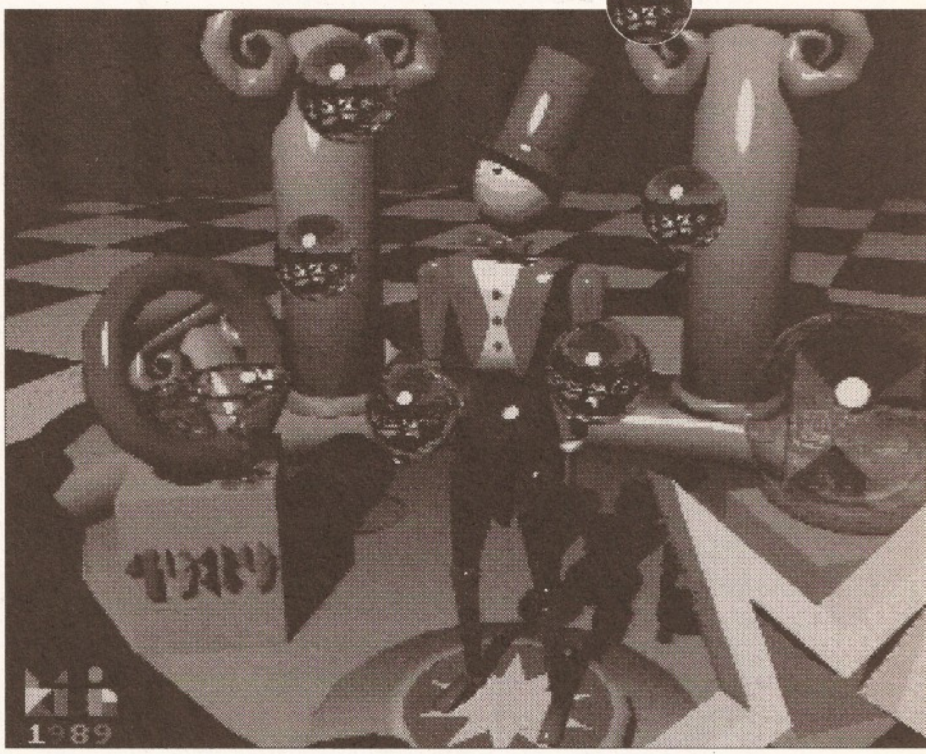
Another demo which knocked me on my bottom was the *Magician Animation* version 2 (Crazy Joe's 1552). I've seen some ray-traced animations in my time, but this one takes a whole packet of biscuits. Not much lasting appeal though, so ...

Value for money 7/10

Yaay Tobias!

And speaking of ray tracing, Tobias Richter is never idle. Considering that he uses a ray tracer for a living, that's surprising news. His new animation disks (Amiganuts 1028 and 1029) show you exactly what you can do if you are a





After last month's naughty Sherilyn Fenn caption, I'm not going to mention anything about juggling balls. _(Er, I think you just did – ed.)_

3D head with a powerful renderer like *Reflections* (a German product bound soon for these shores). In these two disks we see a couple of *Star Trek* anims (he always does those) plus a Newton's cradle and a walking robot on a desk. The robot is a very complex object, and animating it must have taken a lot of Tobi's time (and CPU time too). Well worth a look.

Value for money 8/10

WILE E COYOTE

Another animation worth a look, this time a *Moviesetter* animation, is the *Coyote* anim (Crazy Joe's 1293). This is a short *Coyote/Road Runner* cartoon, and the clever thing is that it actually looks and sounds like one.



The Coyote jumps out on the Road Runner and misses, of course. Then he gets hit by a truck. Usual Road Runner fare. But the animation is very true to the original show, and the sound effects are funny and well-timed. Nice job, and particularly of interest to fans of the show.

Value for money 6/10

continued on page 123

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Utilities

These are programs to help you use your computer. Some are just simple commands for the C directory for use from the CLI or Shell, but others are complete menu-driven programs to compress files, convert them from one format to another or even rescue broken disks. (Something that I needed many a time when I wrote this article, because of a bunch of bad disks destroying my copy. I managed to salvage some, but lost at least one quarter of a day's work.) The best disks to look for are the collections of utilities with a selection of the best utils all squeezed onto one disk. Virus killers are one of the most useful PD utils, and the best thing about them being PD is they are freely updated and distributed all the time.

Applications

Some of the best programs are PD. *SID*, for example, is one of the best graphic interfaces for AmigaDOS, and it's PD, or, to be more precise, 'shareware'. SID is a graphic front end for the AmigaDOS file system, allowing you to move files around, delete them, rename them, copy and re-organise your disks. I don't know a single Amiga-head who wouldn't be lost without his copy of *SID*. And there are many other kinds of programs too, from business programs to graphics programs. Check the PD libraries before you lash out some cash on a program. You may find a PD solution which could save you £££'s.

Demos

This is a new art form, only possible on the Amiga. The demos are created by a team of hackers, usually called a 'crew' or 'team', who get together, have a 'late night hack attack' and create a dazzling demo of their programming abilities. The demos can be graphic or music-based, but always they have the feel of a pop video and the music is generally of the dance variety, although some more exotic sonix do come out from time to time. Demo teams usually go on to be professional programmers after a while, so their demo days are usually numbered. Scoopex and Silents are two of the best teams, and the likes of Kefrens are not to be missed. Imagine a cross between a dance record, video and lightshow and you're getting the idea.

Game Demos

In recent years the various major software houses have watched the PD arena growing, and noticed that people buy demo disks, especially when on the cover of a magazine. So they release demos, sometimes fully playable demos, of their new releases, allowing the punters to try their game before they buy. Demos of this kind usually turn up bundled with magazines such as our sister mag *Amiga Format*, and then the demos turn up on their own in PD libraries. A successful and popular demo translates into a very popular game. For example take note of the enormous success of *Lemmings* from Psygnosis.

Slideshows

Some Amiga artists spend a lot of time on artwork on the Amiga, which is no good if nobody sees them. So a lot of artists make slideshows of their work for public consumption. If you're very clever (or own one of the fab new snapshot cartridges) you can grab the art and examine it minutely to see how it was done, and you could even use it as clip art in your DTP packages. (Beware though. Some PD artists may get a bit cross if you do. Some of the most stunning stuff comes from a chap called Tobias Richter, an artist who lives in Germany. He uses a ray tracer called *Reflections* (coming soon to the UK) and turns out some amazing stills and animations based on *Star Trek* and other sci-fi subjects. Watch out for him under the name 'Agatron'.

Music Demos

Some PD authors are music nuts and they spend their life churning out disks of tunes for you to play on your Amiga. Some are *Soundtracker* or *Noisetracker* sampled tunes from the charts, re-mixed in the Amiga. Others are synthesised tunes from the classics. Most are pretty good. If you like well-sequenced music, I think you'll be surprised at the very high quality of the tunes around on the Amiga PD circuit.

There is some PD that is not free to all and sundry. Such stuff includes:

1 Licenseware

These are games or programs that are licensed to specific PD houses to prevent the free distribution of the program, although the price to the consumer is pretty much the same. *MED* is a good example: a music program that is licensed to Amiganuts United. This program is sold by Amiganuts and a proportion of the fee goes back to the author in Finland. This scheme works better than shareware as the money is handed over when you buy the disk, rather than trusting the users to pay you later.

2 Shareware

This is a branch of PD that you pay for, but the author lets you use the program to see if you like it first. Shareware isn't expensive, as the author usually only asks for between £5 and £25 for his or her efforts. In most cases it's worth paying in the end, as you get free upgrades and documentation. There are lots of 'ware'-type schemes. Freeware is usually the name given to normal PD. Beerware was one idea where the fee for using the program was to send the author some beer. Exclusiveware is a new idea, which works a lot like licenseware.

Disk magazines

Magazines on disk are not new, but there are more now than ever before. *Newsflash, 17 Bit Update, Computer Lynx, Scanner* and *Jumpdisk* are prime examples of the type of thing I'm talking about, and they are all very good, usually containing PD software, demos and music, plus a lot of graphics and text as well. The text usually consists of software reviews or perhaps a bit of hardware, and usually it's quite short to keep the amount of different text files up and leave space for programs too. The text is sometimes a bit on the ropey side, but that's what you get for having a writer who's an editor too. A spell checker wouldn't hurt some of these guys, I can tell you. Not unless you hit them with the disk.

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And finally, there are a lot of very crap *Simpsons* demos, (under-achievers, you might say), awful re-mixes of *Do The Bartman* etc., but at last here is a really good one.

The Simpsons Demo

The Simpsons Demo (NBS) is a classy remix of all the best bits of the *Do The Bartman* tune, plus some wicked animation based on the *Simpsons* video. A very clever demo, a good remix of the original video and an enjoyable break from the usual shoddy slideshow versions I've seen up till now. Nice work from Decay of Australia, and a brilliant 'Coke advert' at the beginning of the demo, with a snatch of the music: *You Can't Beat the Feeling* and a very sharply digi-drawn pic. Ton ten in a week, I'm telling you.

Value for money 9/10

Utilities

HAMLab

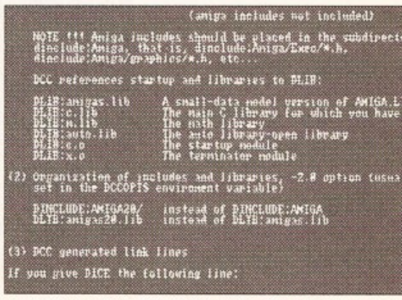
There are a lot more PD houses that specialise in utilities and applications nowadays. And with good reason as there's a lot more serious stuff out there now. Like *HAMLab* (17 Bit 916), for example, written by Dreamer of the Wizzcat crew. This is a program that converts pictures to and from HAM format, plus the facility to choose to make the image an executable object. This makes the picture so that you can type the name of the file from the CLI (or from a script, as my mate Mark Smiddy would tell you) and the picture will be automatically displayed on-screen. So it can be shown on screen, but not loaded into a graphics package, which means your graphics are safe from nabbing hands ... except the nabbing hands that own snapshot carts, anyway. Very nicely done.

Value for money 6/10

The DICE man cometh

DICE (Softville Fred Fish 443) is a PD C programming environment, with all the things you need to write and compile your C programs. This should put the big C compilers out of business, as it's a very complex and

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What a dice program this is. A whole C environment for free.

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safe C environment, designed and built by Matt Dillon. (No, not the film star, the guy who hacks the Amiga).

Value for money 9/10

Impersonation

Emulators are another new thing in the PD world. How about a PC emulator in the PD? Try Virus Free disk 1485 and you've got just that. There is actually a number of different versions of the program on the disk, and you'll have to have some PC disks to try, but it works OK – for a software emulator, that is.

Some other emulators are on Amiganuts disk 1030. For £2.00 inc p&p you get a Sinclair Spectrum 48K, a Sinclair QL, and a Commodore 64. All three emulators work very well indeed and your only problem is getting software across to the Amiga. The Spectrum emulator works by ingeniously loading the software via a sound sampler. I haven't got it to work yet; I wonder if anyone has?

The C64 is shareware, and after you send in the contribution, you get sent a piece of hardware for connecting to a C64 disk drive. The QL ... well I'm not sure about this one. The original demo comes with a couple of programs to run, including a word processor, which was rather good as I recall. But how you'd transfer software to and from the QL I don't know. If your QL still works, that is. Why doesn't some software house produce versions of some of its old Spectrum, C64 and QL output on Amiga disks? Now that really would be a nice little earner.

Value for money 10/10

3D font

The 3D artists among you may like to know that there is a 3D font for *Sculpt 3D* on 17 Bit disk 1007. This allows you to render words in 3D and light them. You can even transfer them to another format if you have a convert util. Now when is someone going to come up with one of those: a 3D format converter in the PD? That really would be useful.

Value for money... 5/10

Look here

Two special bits of PD from Kernow Software PD: the WB2 *Look* disk is a self-booting demo of the WB2 *Look* programs and colour schemes. This alters your graphics.library to give you a Workbench 2.0 look-a-like. Sadly it isn't as nice as WB 2.0, but I suppose you can't have everything. The other thing from Kernow disk 003 which, as well as having a copy of *NoClick* (stops your drive clicking), *Othello* (one of my favourite games) it also has *SID*. *SID* is the indispensable Amiga users tools, and a classic even at version 1.06!

Value for money 10/10

APPLICATIONS

A-GENE 3.12

The field of applications has swollen beyond all proportion lately, with some of the best applications being programmed in *AMOS*, strange to tell. My personal favourite, just because I'm interested in that sort of thing, is *A-Gene* v3.12 (Amiganuts 933). This is a genealogy program, allowing you to chart your family tree. The author is Mike Simpson of Australia, and the PD version of the program is limited, but it's a useful taster of the full-size package. You can, however, send the author some money and he'll get you a version with greater capacity. This is the newest version, and as with all Amiganuts' products, the latest version is always the one they ship.

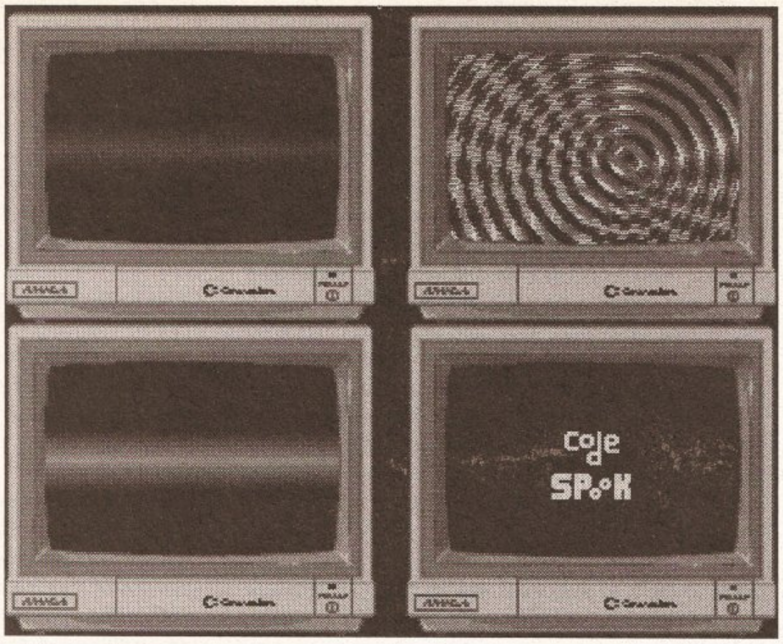
Value for money 8/10

TEXTPLUS 3

Textplus 3 (Amiganuts 1047)is a later version of a word processor/text editor I slagged off in a previous issue of *Amiga Shopper*.

I've since played with this new version and it's much much better. It allows you to write anything from a letter to a thesis and print it out or save to disk. Formatting is a wee trifle on the strange side to use sometimes, but you can usually get the effect you're searching for with a bit of twiddling.

Value for money 9/10



Magnetic Fields gives you four monitors in one, with sassy music, bright graphics and a well spooky message. Forget that Condor moment.

MED 3.10

MED 3.10 (Amiganuts 1065) is a bug-fixed version of Teijo Kinnunen's great music sequencer program. I've also seen a preview version of *OctaMED*, an eight-channel version of the same program. This should be out soon, but Teijo is in the throes of his exams at the moment, so it may be a month or so from completion.

Value for money........... 10/10

AMIGABASE PROFESSIONAL II

Amigabase Professional II (Amiganuts 1036) is a database program written in *AMOS* –again – and very good it is too. I have a very large video collection and now I keep track of the titles, directors, stars and dates of all the films I have on tape, amounting to about 400 different entries at the present, and I still haven't finished cataloguing. A good program, and this version is licenseware to Amiganuts only. I use RAMOS to run the program from my hard disk on my Checkmate 1500 machine, and it works very smoothly. I had a bit of trouble running the thing using an accelerator lately, but not many programs can take licking along at 50MHz.

Value for money 8/10

MUSIC

SPACED OUT

Only three outstanding music demos turned up this month, and two of those are by the same crew.

Magnetic Fields' *Spaced Out* Vol 1 (17 Bit 914) and Vol 2 (915) are two stand-alone demos using a screen made up of four Commodore monitor screens.

The pictures in each screen flash and pulse to the music and you select the tunes you want to hear from a menu, which is accessed by holding the right-hand mouse button and pressing the left. The selections appear in all four screens and you simply pick from there.

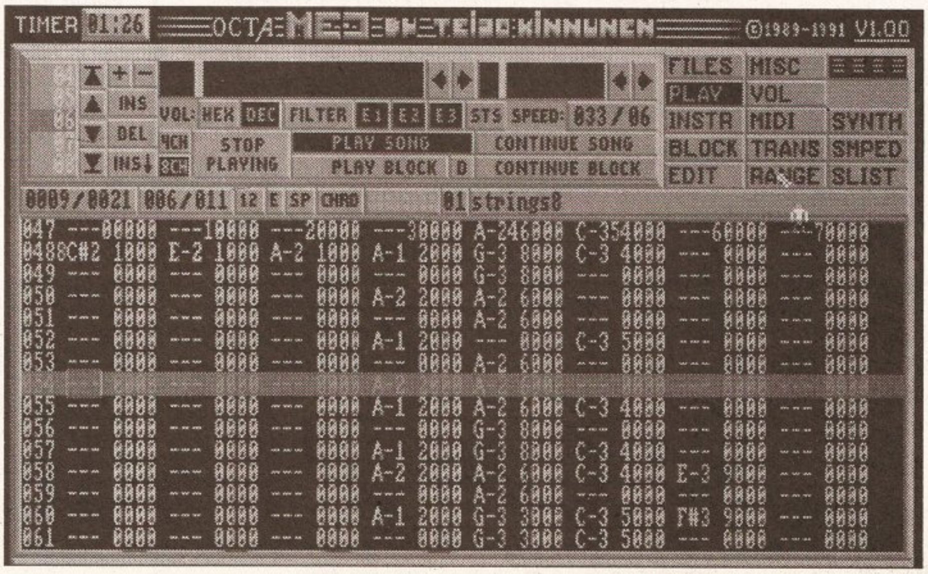
Value for money 6/10

Get a move on

The other music demo is a Depeche Mode disk of tunes put together by Symbiosis, which, if you're a fan of Depeche Mode, is a real treat.

The material is culled from the lads' rack of top-ten hits over the last ten years, or however long they've been going. Classy graphics are on offer too and, although the graphics in a music demo aren't as important, presentation makes an awful lot of difference as to how a demo finally comes across.

Value for money 8/10



These computer-graphic artists certainly know their onions when it comes to impressive Mondrianesque images. Oh, sorry. It's the *OctaMED* music sequencer display. Oops.

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GRAPHICS

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DELUXE DRAW

My thanks to Mr Sewell of Goldstar Computers, Manchester, for the PD graphics programs. He sent me four from his PD library, all of which are rather good, despite being mostly coded in some form of Basic.

Deluxe Draw (Slipped Disk 18) is written in AmigaBasic and, although very slow and only having one resolution to speak of, the program is very cleverly done and gives you access to all the basic graphic tools.

Value for money 5/10

AMOS PAINT

AMOS Paint (APD 83) is a stage more sophisticated, having more tools and being a lot faster than the *Amiga Basic* program. The program covers all the Amiga resolutions, including 64-halfbrite, but does not include HAM.

Value for money 7/10

SPECTRAPAINT

Although *Spectrapaint* says it does HAM, I can't find it. It is, however, a much more sophisticated program than even *AMOS Paint* and could easily take the place of *DeluxePaint* for the tight of pocket.

Value for money 9/10

SKYPAINT

Finally *SkyPaint* (TBAG 37) is a peculiar item which records the order in which you draw things on-screen and redraws them to make a kind of animated display.

It's very odd, although judging from the amount of BBS adverts smothered all over the disk, I'd say it's just for producing advertisements for Bulletin Boards.

Value for money 5/10

BROADCAST PICTURE LIBRARY

On the slideshows front there's a lot of very high-quality stuff. Look out for the PD demo disks by NiK Williams Broadcast Picture Library. These are VERY high quality pictures digitised at Nik's studios in Swansea. You can get a demo disk from: Aspect House, 21 Brynmill Crescent, Brynmill, Swansea, SA2 0AL ☎ (0792) 470503.

Value for money 7/10

SLIDESHOW 12

Tobias Richter turns up again, this time with his excellent *Slideshow* 12 (Amiganuts 1027), featuring some very sharply detailed *Star Trek* pictures, all rendered with the *Reflections* program.

Texture mapping is excellent, and the planets are especially good examples of this technique. The thing that separates Tobi's work from that of other people is the subtlety of his colouring and lighting. Remember, these pictures are rendered and not drawn, so everything has to be carefully set up in order to produce a convincing result.

Value for money 6/10

NASA SLIDESHOW

Now, I like the space shuttle. Call me old-fashioned, but I still believe in the space program, and I won't hear a word said against it. So I was twice as pleased as anyone to receive the *NASA Slideshow* (17 Bit 907). The disk features a lot of pictures of men with crewcuts in NASA suits doing what they do for a living.

Lovely clear HAM interlace pictures, mostly, with the odd, ropey low-res pic.

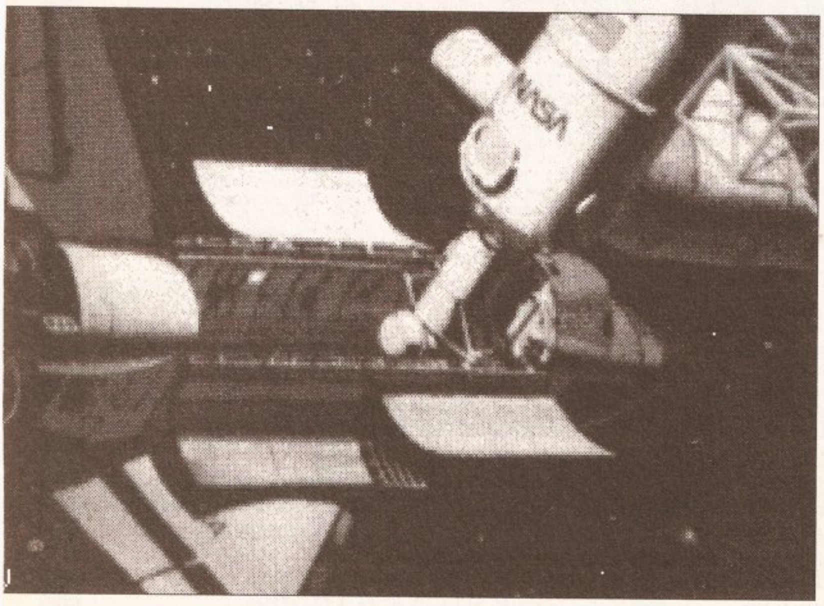
Value for money 6/10

SLIDESHOW KIT

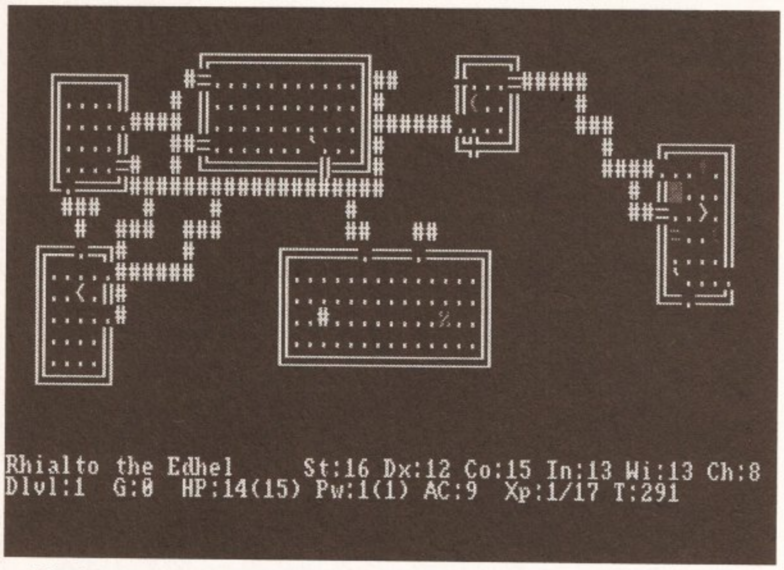
And lastly, for those of you that are a bit nifty with the old graphics yourself, there is *Slideshow Construction Kit* (Virus Free 1465).

This offering from Adam Rybicki is an icon-driven program which allows you to create scripts of screens and transitions to make your own slideshow disks. It didn't know which screen format was which, but you could use a chopper program to convert the pictures to interlace.

Value for money 8/10



No Challenger jokes, no 'out-of-this-world' quips. Just a nice picture of a space station doing something very strange to a NASA space shuttle.



Riveting graphics and stunning sound effects fail to materialise in the utterly addictive *NetHack*. Wasn't there a game like this for the VIC 20?

GAMES

Megaball and all

A gaggle of games turned up this month and, oddly enough, the most addictive one of them all is the least visually stunning.

I won't dwell on the games for very long, as this mag is supposed to be a game-free zone. Nonetheless, PD is one area where you can get games on the cheap.

Like *MegaBall* (Crazy Joe's 1539), which is a very fast and playable clone of the *Breakout/ Arkanoid*-type game. Or perhaps the exclusiveware game, *X-System* (Virus Free) by Microcinema, which is a sort of science fiction platform game.

Or what about *Hollywood* on Kernow 008? This is a very nicely-written quiz about movies and TV programs, such as *Star Trek*, both old and *The New Generation*.

NETHACK

But my very, most favouritest game of the month has to be *NetHack* (Softville Fred Fish 460). This is a rather old game written in the C language on a dirty great old UNIX machine. The game has been ported around onto the PC, the Mac and now it has arrived in a version suitable for the Amiga.

During play you are a hero and must delve into the dungeon to get the treasure. I know; it all sounds a little bit old-hat. Also, the graphics are really crap, the sound is non-existent, so can anyone please tell me why this game is so rivetingly addictive? Hmm?

I thought not. All the games reviewed this month get a hearty slap on the back and ...

Value for money 8/10

except *NetHack* which gets

Value for money 9/10

DISK MAGAZINES

17 BIT UPDATE

Disk-based magazines is a growth area, with some good mags coming out all the time. The usual mags are still up to their high standards, with the best still being *Newsflash* and *17 Bit Update*, both produced by Martyn 'Spadge' Brown.

On *17 Bit Update* issue 19 we have: *Dirwork*, a brilliant *SID*-a-like program with lots more built in features; *Colourcatch*, a program that catches the colours of the top-most screen, allowing you to patch them to another; and *Rubik*, a program to help you solve the Rubik's cube, with an animated display. (That's if you can find the darn cube under all that fluff in your attic.) As well as that, the disk has graphics' demos, music demos, and screen hacks like *Blob* (which drips blood down your screen) and a version of *OpenLook* for the Amiga. Excellent value.

Value for money........... 10/10

NEWSFLASH

Martyn's other magazine is just as exotic, with *Newsflash* 17 containing a pile of utils and demos. *Powerboot* is a bootblock menuing program by Metallion of the Kefrens team, and the disk also contains the *NewTopaz* program also by Metallion. *3DPlot* is a program that enables you to plot a

continued on page 129

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280 Tree Frog Animation *
288 The AMOS Demo
298 Unicycle Animation *
399 NewTek Demo 3 (2) *
483 Elvira Demo
646 Predators Megademo (2)
744 Red Sector Cebit Demo
747 Popeye Meets Beachboys
762 The Run Animation *
773 Shark Animation *
825 Budbrain Megademo (X)(2)
853 Dragons Lair Demo *
854 Bread/Home & Away Demo
865 Coma Demo
895 Trip To Mars
897 Scoopex Mental Hangover
906 Madonna Cartoon *
947 Mars Flight Animation *
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964 Operation Vark!
966 Bloodsport 2
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987 Snakepit
991 Jeopard *
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1245 Rings of Zon *
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1411 A62: Arcadia
1510 Pick Up A Puzzle (2) *
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1528 A130: Wooden Ball *
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1532 A137: Tile Trial *
1533 The Jar *
1539 Megaball *
1544 Seven Tiles
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1578 A147: AMOS Games 2
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1555 Steve's Anim Disk 3
1556 Steve's Anim Disk 4
1557 Steve's Anim Finale Disk
1560 Phenomena Enigma Demo *
1586 A155: Panthorus Demo 2
1598 A168: Curos & Stauros (2)
1628 "Do The Bart, Man" Demo *

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891 Creepshow
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123 ST-91 Lots more samples
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456 STEALTHY ANIMATION Funny Cartoon Style Anim*
458 STAR TREK FLEET MANEUVERES Impressive ! *
623 BATMAN MOVIE As reviewed, Quite funny*
627 DEMONS SLIDES 3 Very good graphics slideshow
634 MINER ANIMATION Nice skulpt animation*
654 RELIANT ATTACKING Another Superb TR Anim*
655 HUEY 2 Helicopter Taking off* Reviewed in AF20
666 STAR TREK PINGPONG FlyBy anim by T.Richter*
667 - 668 LIGHT CYCLES Animation from the film TRON *

GAMES AND PREVIEWS

296 RA GAME PREVIEW Egyptian type game
446 BIONIX Superb Arcade ShootEmUp
448 PACMAN The old classic game on your Amiga
472 ED-209 Great Shoot-out with turtles Etc.
509 LEARN AND PLAY 1 Education and Games
510 LEARN AND PLAY 2 for 4-9 Yrs
571 TREASURE ISLAND Find that treasure !!!e
594 MONOPOLY The old Classic computerised
595 BOARD,CARD,ARCADE GAMES Lottsa stuff on this
596 COLOSSAL ADVENTURE Plus World adventure
598 BATTLE FORCE Good Strategy War Simulation
626 THE EVIL DEAD GAME Splatt those Dead People
638 TETRIS 3D You Thought Tetris was Hard !
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672 DRIP Brilliant painter-type game Arcade Quality

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133 CRUSADERS BACTERIA One of the best Music disks
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225 DIGITAL CONCERT 5 The Power, Kaos,Touch Me
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252 - 253 BUDBRAIN MEGADEMO Great Demo,may offend
424 SOUND OF SILENTS Incredible Music disk !
425 DIGITAL CONCERT 6 Another Housey remix
532 CRUSADERS - A FEW TUNES Very well composed
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608 CRUSADERS GENESIS Very nice Genesis songs*
611 FARTS AND BELCHES No comment ....
621 BANGING RAVES 2 Follow up to Banging Raves
628 AMIGADEUS CLASSIC MUSIC Mozart Amigatised !!
645 SYSTEM VIOLATION DEMO Wicked demo by Anarchy
646 MADNESS II BY DAN/ANARCHY Its Insane !!!
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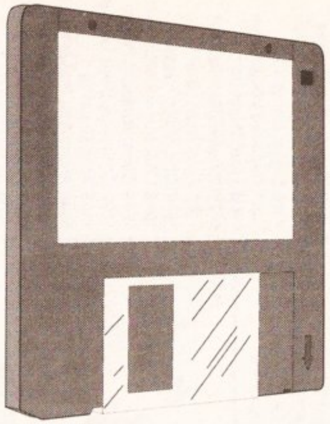
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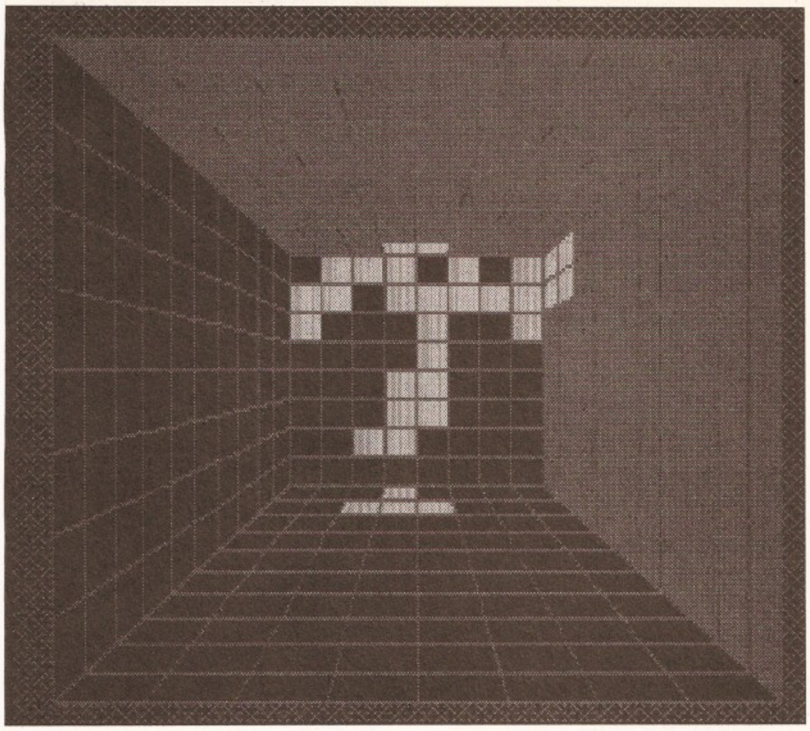
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Ah Comrade, the evenings round the fire I would spend vith my liddle Lupka and our *Welltris* clone. Pass me the Wodka, I'm going to cry.

continued from page 126

3D version of any formula. And there is a patch program that turns your old version 3.0 *Powerpacker* into version 3.0b. The artwork in this issue is by Tobi Richter, from his *Slideshow* disk, and there is also an *AMOS* version of the old *MahJong* game. Plus (what, more?) there are demos by Demons, Cave, Anarchy and Rico Holmes, and a playable demo of the *Future Combat* II game. *Newsflash* is always PACKED with loads of stuff, so do try to catch it.

Value for money........... 10/10

SCANNER

Two new mags have reached my attention, *Scanner* and *The Disk*, both produced by very talented chaps.

Scanner is by Telescan Computer Services, 63 Fleetwood Road, Blackpool FY5 1SB. The disk is licenseware, meaning you can buy it from Telescan but not spread it. The premier issue features games like *Welltrix* (a *Welltris* clone), a vector demo from CAVE, the new copy of *DiskMaster*, plus lots more. A very well laid out and useful disk.

Value for money 9/10

THE DISK

Another goody is issue 2 of *The Disk* by Stephen Lord. This is another very well laid out disk, and features *Powerpacker Turbo*, plus lots more utils like *ST Ripper*, a util for ripping *Soundtracker* scores from demos etc. Also there is *SuperEcho*, *Textra* (a text editor), *VectaCheck*, *IconMaker*, *Cosmoroids* (asteroids), *Kill Da Virus* III, and some other bits and bobs too.

All of it useful, although I have to say that a lot of it is stuff I've seen before, especially the *Poi-Poi* demo, which must be a year old by now. But that's not to say that the disk is all old hat. Although a lot of it has been seen before, it *is* very good stuff and makes for a good disk. You can get *The Disk*, or at least further info from: 6 Stubbing Brink, Hebden Bridge, West Yorkshire, HX7 6LR

Value for money 7/10

That's yer lot

It is time once more for me to get lost. But If you have any questions about PD, or some viewpoint you might like to share with me, then why not drop me line at Software for free, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. Or email me on CIX (snouty@cix.co.uk), Prestel (219997854), Telecom Gold (74:mik2077), or The Direct Connection (uad1135@dircon.co.uk). AS

PD PAYMENT

If you haven't got a modem and access to a good BBS, then the only way to get your PD is to spend money and buy some. But you thought I said PD was for free? Well PD is free, but disks, postage and the wages of the men who sit all day at the copying machine aren't, so be prepared to pay from 99p up to about £2.50 per disk. The price you pay for your PD is up to you, although some people get a bit cross paying £2.50 when other houses do disks for 99p. I suppose it depends on where they buy their disks, and from whom. Plus it depends how they duplicate their disks. If they have an office and a duping machine, then it costs money to run. But if they've built the PD house into an existing business or are a one man outfit anyway, then obviously they have no overheads to speak of. It's up to you, but the only way to find out for sure is to spend 99p. Or read *Amiga Shopper* every month.

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Editor Bob Wade
Production Editor Karl Foster
Technical Editor Cliff Ramshaw
Designer Jacquie Spanton
Consultant Editors Jeff Walker, Mark Smiddy, Phil South
Contributors Nick Veitch, Mick Draycott, Peter Jones, Sam Littlewood, Jon Bates, Pat Winstanley, Paul Andreas Overaa, Gary Whiteley, Jeremy Patton
Ad Manager Margaret Clarke
Ad Sales Executive Shaun Lancaster
Illustrators Jolyon Webb, Rob Porter, Kev F Sutherland
Photography Ashton James
Production Deborah Cook
Production technicians Simon Windsor, Chris Stocker, Jerome Clough
Publisher Greg Ingham
Promotions Manager Michele Harris
Publishers' Assistant Tamara Ward
Circulation Director Sue Hartley
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EDITORIAL

**30 Monmouth Street,
Bath BA1 2BW
☎ 0225 442244
Fax: 0225 446019**

ADVERTISING

**Advertising Manager
Margaret Clarke**,
2nd Floor, Rayner House,
23 Higher Hillgate,
Stockport SK1 3ER
☎ 061-474 7333
FAX: 061-476 3002

**Ad Sales Executive
Shaun Lancaster**,
30 Monmouth Street,
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Don't miss out on issue three of *AMIGA SHOPPER*. Every serious Amiga user in the country is trying to get their hands on this magazine and you don't want them to beat you to it. Over 100,000 *Amiga Format* readers saw the special preview issue and issues one and two sold out virtually instantly in many places. So, to guarantee your copy, either;

- Make sure you remember to rush into your local newsagent and buy it on the morning of Thursday July 4.
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TO THE NEWSAGENT – *Amiga Shopper* goes on sale on every first Thursday in the month. It is published by Future Publishing and is available from your local wholesaler. Please return this form to Kate Hodges, Future Publishing, 30 Monmouth St, Bath BA1 2BW, to enter our free prize draw.

NEXT MONTH

Issue four of *Amiga Shopper* is on sale on July 4 and to celebrate coming out on American Independence Day we're doing nothing special at all.

However, to celebrate being the only magazine that's really serious about your Amiga, we're going to do lots of special things – like a huge test of mono printers. Mark Smiddy is at this moment listening to the rattle and hum of umpteen 9–24-bit printers as he puts them through gruelling tests to determine their speed, print quality and reliability.

The *Amiga Answers* section will swell again as we deal with the ever increasing pile of requests for help. There will be reviews of two spanking new modems from Supra, a fascinating new word processor, *Wordworth*, from Digita and *Superbase Professional 4* from Precision. Not to mention yet more reviews, tutorials, programming, news and more PD than ever.

If you want our advice – buy it. Miss this mag and you'll be missing something special.

ADVERTISERS INDEX

HiSoft News

All the latest news and product information.

ProFlight takes off!

ProFlight, the extremely accurate and flyable Tornado flight simulator from HiSoft, is due for release on the Amiga by the end of May 1991.



First released on the Atari ST where it has won a high degree of critical acclaim from reviewers and users alike, ProFlight is not only one of the most technically realistic simulators around but it is also tremendous fun to fly.

You can fly peaceful reconnaissance missions or roar into attack after carefully planning your combat mission. ProFlight is supplied with a comprehensive, ring-bound flight manual for an all-inclusive price of £39.95.

SAS C5

SAS Institute (the parent company of Lattice Inc.) has taken over the development and sales of the Lattice C 5 compiler for the Amiga and released a new version, 5.10a.

The improvements and enhancements in this version establish SAS C5 as the ultimate Amiga C compiler. Upgrades cost £34.95 (ver. 5.0x), £79 (ver. 4.xx) or £99 (ver. 3.xx).

Pascal at last!

HighSpeed Pascal

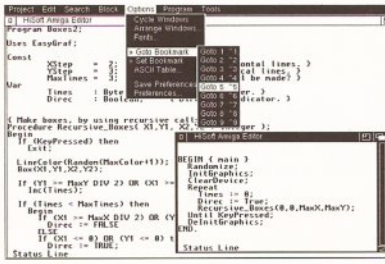
A brand-new version of the popular Pascal language will be available soon for the Amiga (A500 - A3000).

HighSpeed Pascal originally comes from Denmark, (the 'home' of Turbo Pascal), is extremely fast and friendly to use and is very closely compatible to the immensely popular Turbo Pascal on the PC.

Compilation speed is roughly 20,000 lines per minute on an A500 with excellent code generation for all the Amiga computers.

HiSoft is developing the package along with the original authors, D-House. Some of the features of this exciting new compiler are:

- Compile to memory or disk
- Unit concept as in TP5 allowing modular development and very fast compilation. Many standard Amiga-specific and Turbo Pascal compatible units are supplied
- Stand-alone compiler supplied. Multi-standard linker. Versatile Make facility
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- Inline procedures. Source code control using conditional compilation



The HighSpeed Pascal Editor

- Integrated, multi-window editor with on-line help and interactive error detection and correction
- Numerous examples and helpful manual

HighSpeed Pascal should be available by the end of May 1991 at an inclusive cost of £99.95.



More and more...

In addition to ProFlight and HighSpeed Pascal HiSoft is set to release a number of other new products for the Amiga in early 1991, showing our increasing committment to the Amiga range of computers. To whet your appetite:

HiSoft C Interpreter

The ideal way to learn the difficult C language, HiSoft C is an interpreter with a fully integrated editor and debugger. Release is due by the end of June 1991 at a price of £49.95.

HiSoft Inspiration

This exciting new product makes it simple to design and use the Amiga's gadgets, requesters etc. in your favourite programming language. Release date is the end of March 1991.

Devpac and BASIC

HiSoft Devpac version 3 and HiSoft BASIC version 2 are due out in the first half of 1991. Both feature a brand new, multi-window editor, much more speed and a great many new features. Tick the box(es) below for details.

Meanwhile, we have some very special offers on our existing products - use the order form below (you can photocopy it if you wish). Devpac 2 and BASIC 1.05 contain coupons offering you the chance to upgrade to Devpac 3 or BASIC 2 for £35 and £45 respectively.

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